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Church-building and Things to be Considered, Done, Or Avoided in ...

Francis J. Parker

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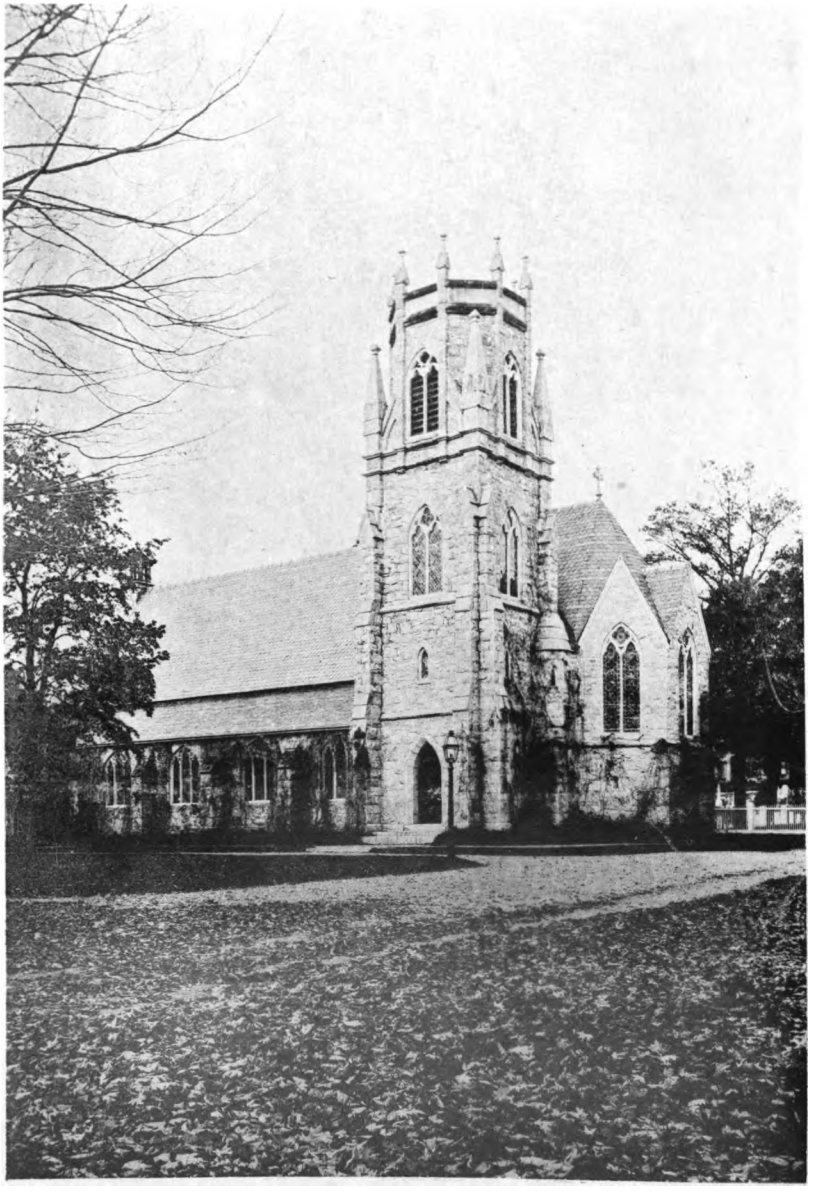

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SPEECH-BUILDING

AND

SOME OF CONSIDERED, DONE, OR AVOIDED

IN CONNECTION THEREWITH

BY

FRANCIS E. PARKER

WITH ILLUSTRATIONS

BOSTON
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1886

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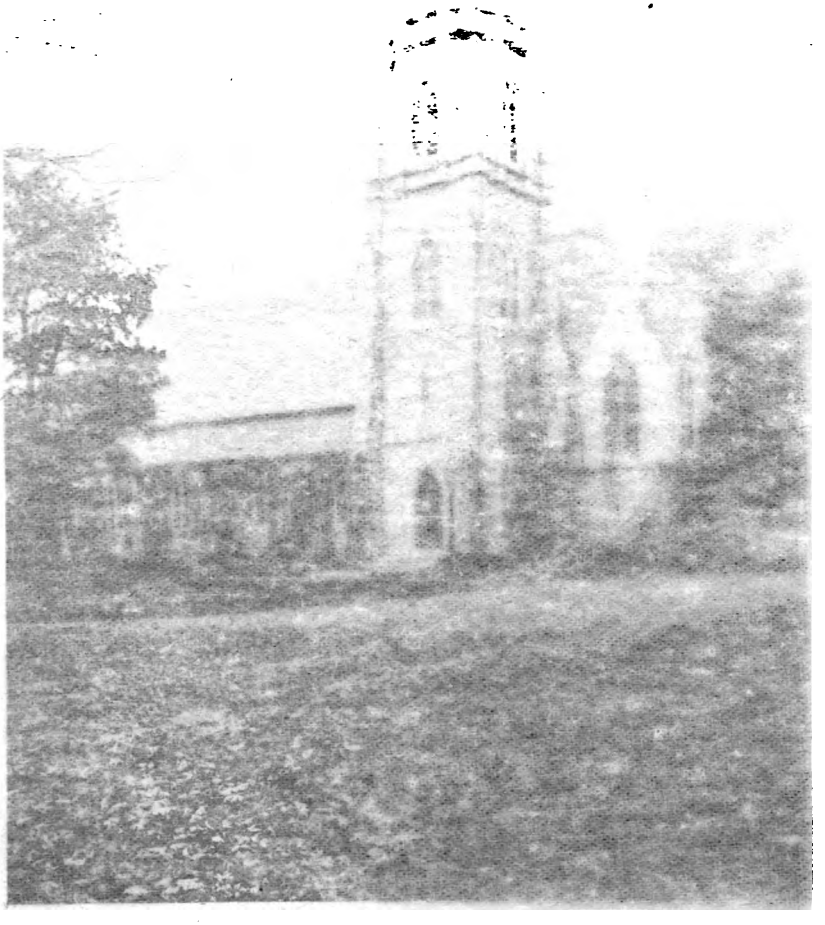

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CHURCH-BUILDING

AND

THINGS TO BE CONSIDERED, DONE, OR AVOIDED
IN CONNECTION THEREWITH

BY

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WITH ILLUSTRATIONS

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CHURCH-BUILDING.

INTRODUCTORY.

WHILE there are great numbers of books that treat of church architecture, I do not know of one which offers to fill the place for which this is intended. The books on similar subjects, one by Sir Edmund (Denison) Beckett,[1] and one by Mr. J. T. Micklethwaite,[2] published in and written for England, are full of valuable suggestions and wise warnings, but as a whole neither of them is "calculated for our meridian." The needs of the American church are very different from those of the Church of England, not only because of differing climates and social and church organization, but also because of the greater variety here of wants to be met, extending from the needs of some remote mission upon or beyond the frontier of civilization to city churches of considerable dimensions.

[1] Lectures on Church Building with some practical remarks on Bells and Clocks.

[2] Modern Parish Churches: their place, design, and furniture.

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In this country the responsibility of church-building usually devolves upon persons who have had no previous experience of the kind, and often upon those who have known nothing practically of any kind of building; in which cases experience of the difficulties attendant upon such undertakings is acquired very much as the Irish pilot ascertained the position of dangerous rocks, — namely, by running against them. It was in this manner that I learned my first lessons as to the need of some such assistance as I have attempted to provide, by adding to my own experience and observation that of many others.

It is not safe to assume that all such deficiencies on the part of a building committee will be made good by the employment of an architect. Very often important matters must be considered before an architect can be chosen, and in every case there are peculiar circumstances to be provided for, and questions to be settled, concerning which the architect will have no professional preference, yet which may affect his plans or the interests of the parish. Besides these there will be cases where the remoteness of a mission or the temporary character of the structure induces the builders to dispense with the supervision of an architect.

My object is therefore to supplement, but by no means to supplant, the services of the architect, and

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more especially by calling attention to points which it will be well to consider and discuss with him and to determine before the construction is begun, — many of them before plans are drawn. For the sake of clearness and brevity I shall often speak perhaps too dogmatically, but the reader will please to understand that where it is asserted that a thing should or should not be done in this or that way it means simply that such is my opinion. I have a sincere hope and confident belief that these pages may prove useful to those who shall have occasion to undertake the responsibility of church-building, by exciting discussion if not otherwise.

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THE ARCHITECT.

THE question, "What is an architect?" is one by no means easy to answer. It would seem as if the popular judgment considered an architect's sign to be a sufficient diploma. Sir Edmund Beckett says an architect is "a man whose designs for building other people are willing to adopt." My own definition, however, would be, "one competent, by education, to be the adviser of builders and the designer of buildings."

"A man does not become an architect merely by calling himself one;" and a man may be a very good architect, and nevertheless not be competent to design a church. It is of the utmost importance that no mistake should be made in the selection of the architect; and yet the selection must be made in the great majority of cases by inexperienced persons. What course of proceeding, then, will enable unprofessional people to choose, and choose wisely, a professional adviser?

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Committees charged with church-building very commonly ask several architects to prepare and exhibit to them, in competition, designs, elevations, etc., for a church to seat a given number of persons, and to cost about a certain amount of money; and from the drawings presented to them under such an invitation to adopt one for their purpose, employing its author as the architect. This mode of selecting an architect is not the best for a parish, nor does it afford a fair test of professional ability; it is an excellent way to ascertain which of several persons can make the most attractive picture, in which a church shall be the chief object. But it is a structure that is wanted, and not a picture, — an architect, and not merely an artist. When one examines a collection of landscapes, the preference is given to that in which pictorial effects have been most successfully attained, and not to that which represents the best cultivated farm or the most convenient residence.

There will be some cases in which the comparison of pictures must be relied upon by a committee, largely or chiefly; but those will be for the most part such as relate to buildings of a temporary character and not involving great expenditure. The best way to estimate or compare the ability of architects is by their works, rather than by their drawings; and when distance or expense forbids the examination of churches

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which they have built, there yet remains the possibility of comparing photographs of exteriors, and of corresponding with wardens and others concerning the various churches of which pictures have been obtained. If a committee is determined to rely upon competitive designs, it should be provided that no perspective drawing should be presented; and also that all the plans should be drawn to a certain, and the same scale, on white paper, without the use of colors, or the introduction of foliage or figures; and the limit of cost should be the same in all.

Above all things do not be in haste; time will instruct the eyes and assist the judgment. When it is proposed to build a church which is to be used and seen perhaps for centuries, the utmost deliberation should be exercised and the clearest judgment should be commanded.

Where it is possible, I advise that, having ascertained the locality of several churches which have been built from the designs of each of the architects proposed, the committee should visit and carefully examine them, taking the opportunity to converse with the rector and some of the wardens, vestrymen, or other authorities who are occupying the buildings. These visits may be made by the committee individually or collectively; and they should be repeated if possible, so that all may be seen and considered

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with instructed eyes. There is no need of doing this all at once; indeed it is far better to do it slowly and leisurely. If after such visiting the members of a committee will each set down his first, second, and third preference, among all the churches that he has seen, it is probable that the choice will be determined by comparison of these preferences.

As a general rule any person of moderate culture can, in time, decide as to which is the best of several works, of what may be called the same plane in art. He may not be able to criticise, much less to construct; he may not be able to explain even to himself the reason for his preference; but in the vast majority of cases, that one which after long continued or repeated observation wears best to his eye, that which improves upon acquaintance will be the good one and that which palls will be the bad one.

A church architect should be in some sense an artist, but he should also be a good builder. He may present to you a pleasing drawing of a church, but you cannot walk through the drawing, nor can you by it alone judge of such matters as the sufficiency of light, or the acoustic properties. The picture may be attractive, but the church may prove to be inconveniently arranged, or otherwise objectionable. By visiting various churches, as I have suggested, a committee will have ascertained how each is

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adapted to practical use; how expert the architect has proved himself to be in overcoming difficulties in the process of construction, and to what extent he has exhibited foresight in preventing the occurrence of such difficulties. It is not common for an architect now-a-days to design and construct a church without finding himself at some point brought face to face with difficulties of which the plans had failed to warn him.

In visiting the buildings themselves, the committee will have compared their respective merits, not merely as works of art but also as houses of worship. Instead of theories concerning acoustics, lines of vision, ventilation, lighting, and heating, they will have acquired knowledge of facts; and when their judgment is made up, it will be a composite one; into it will have entered, in what proportion none can say, all the questions which are involved in the duties and merits of architects. In no event can the time devoted to such inspections be wasted; it will be well repaid by the accumulation of the experience of others, rendering it possible to avoid needless expenditures, and defects which have been developed by practical use.

One very strong argument against reliance upon any competition of designs, consists in the fact that that course very commonly excludes from the range

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of choice the architects of the greatest experience, and limits it to those whose merits have been least tested by construction. The most experienced and successful architects are precisely those who are the least in need of additional business and increased income, and those whose time is also the most valuable; so that the time required to prepare drawings which should be fairly creditable to them would represent a money value too considerable for a prosperous business man to adventure. While competitive plans would not, therefore, give an opportunity to select an architect from the number of those who were capable of making the best designs, having in view economical construction and convenient use, the method which I have suggested opens a wider range of selection, and one which may include the best of architects.

Let no professional experience or repute induce the appointment of an architect who is not a churchman. No other can understand fully the peculiar needs of our parishes. An architect, in his quality as an artist, is apt to stamp upon his work something of his own ideas; and his religion or the want of it will affect and appear in any church he may build.

The building of a church is a very different thing from the building of a meeting-house, — I use this term for its distinctiveness only. In the latter case

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all that is required is to construct a building of proper size and strength well arranged for acoustic properties and convenient use, having façades of agreeable proportions and suitable ornamentation. A church should not only have these, but it should also be an artistic design which, in its outward form and its interior arrangement and decoration, should profess an ancient faith. A church should be not merely an edifice in which things are to be heard, but one in which things are to be done and to be seen, and one calculated to encourage devotional thoughts. I never heard of any person who went to a Congregational meeting-house alone, for private devotion; but such use of our churches is common. Our sectarian friends call their places of assembly houses of worship, but they are more correctly houses for preaching. No doubt, worship is possible in them, but they are intended primarily for hearing preaching, and are not intended expressly to encourage and inspire worship; they are not, therefore, houses of worship except secondarily and subordinately.

Protestant marriages and burials take place as a general rule in or from private residences, but the church is with us the ordinary place for those ceremonies; and a certain amount of consideration must be given to that fact by the architect who designs and plans them.

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There should be a clear understanding always as to the relations which are to exist between the architect and the parish or other party by whom he is employed. The claim is now and then advanced that after the architect is selected and his plans accepted, everything should be abandoned to his direction. It would seem that there exist in England societies of architects that make rules by which all persons dealing with members of the societies are supposed to be bound; and those rules have been construed by English architects as supporting a sort of despotic authority of the architects. If there be any such societies or any such rules in America, they are binding on no one except members of the societies. Probably more trouble occurs in this country from want of deference to the advice of the architect than from the opposite. The simple rule of propriety is, that exactly the same weight should be given to the advice of your architect as, in your daily life, you are accustomed to yield to professional advisers, or to experienced artisans whom you have occasion to employ. Probably, if you were to insist upon trying your own remedies for the cure of a malady, your physician would decide to leave you to your own prescriptions. Your lawyer would no doubt retire from your case, if you undertook to change the pleadings which he had put on the record. An artist would

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object to your attempting to paint your ideas into his composition. It is by no means a matter of course that the advice of the architect is to be followed without question, but in whatever respect you are inclined to disagree with him, listen until his views are thoroughly comprehended and make your objections equally clear to him. In most cases he will be able either to convince you that he is right or to incorporate your ideas into his own plans. Suggestions and criticisms will often be very valuable to your architect, as they might be to your doctor or your lawyer; then too the changes which you propose may be immaterial to his plans. By all means state to him distinctly what are your views and discuss them with him freely.

It is the custom to pay for the services of an architect by a percentage upon the expenditure. But in the case of church-building it is very desirable to make an agreement for the payment of a fixed amount which avoids the common, but usually unjust, suspicion that the architect encourages needless outlay in order to increase his own compensation.

The architect ought to know what sum would be a fair compensation, and ought to be able to estimate with sufficient accuracy what extra duty would probably be required of him. Actual travelling expenses should be allowed as an "extra." It should be stipu-

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lated that the plans (not the drawings of details) are to be the property of the parish, the architect being allowed to make copies for himself; and it is only prudent to reserve the right, in case of the death or disability of the architect, to employ a substitute who shall be paid out of the fee agreed upon.

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OF THE SITE.

IF the site of the church has been determined upon beyond the possibility of change, of course it only remains to make the best of it; but in ordinary cases there is some room for selection, and the selection of a site or the making the best of one already selected will repay much and grave consideration.

It is desirable to anticipate if possible the changes which time may bring in the growth of the town or the movement of the population. American cities are usually laid out in squares, the streets bounding which conform more or less nearly to the cardinal points of the compass. Those which run north and south are more apt to be devoted to business uses, and consequently should be avoided, as more likely to be noisy than those which run east and west. It is a noteworthy fact that in almost all towns, even very small ones, the principal street for business runs north and south, and that unless some natural obstacle prevents, that portion of the town lying to the

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westward of this main street is preferred for residence. Inasmuch therefore as churches should be made convenient to the dwellings, the west side of any town will in the majority of cases be the more desirable for a church site. Lots on the north side of one of the side streets and intermediate in the block will permit the accomplishment of two desirable objects, —*first*, the orientation of the church, and *second*, the exposure of the length of the church to a southern aspect.

Orientation, which has been observed from the earliest history of the Christian church, is a matter of symbolism; but there is no practical reason why the chancel should not lie toward any point of the compass except southerly ones. Those are objectionable because from the south the sunshine would glare in the face of the people for the greater part of the day. In the language of church architecture, the chancel end of a church is always the east end. It is well known that churches in England, from the remotest times, were built with the chancel at the east, and the dead within and without the church were buried with their feet to the east; but it is not so generally known that the New England Puritans habitually followed the mother country in both particulars. Nearly every old New England meeting-house that I have seen, and the deserted sites of many now destroyed

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show that the longer axis was nearly east and west, and very generally the pulpit was on the north and longer side, as it was in the larger churches of England, — for the reason that the voice of the preacher would from that point be better heard by a congregation. The chancel services in such churches were intoned in order that the voice should reach farther than in ordinary speaking or reading would be possible.

One rule as to the land applies equally to city and country, and that is to secure a liberal quantity, — enough to allow generously for future growth and for spacious open grounds. No rule is more generally neglected than this, and no mistake is more likely to cause regret. Nobody ever heard of an instance in which a parish had too much land, and in new places the cost is not a serious consideration.

In the case of an entirely rural parish there is a wider range of selection, and other matters may receive consideration; among which may be reckoned provision for a garden, pasture, and grass-land for the use of the rector. As to the quarter of the town, a preference to the westward of, or on the west side of, the main highway will generally be correct; and a gravelly subsoil with a gentle declivity sloping to the south is desirable. In England and in some of our earlier churches the church-yard was also the burial-ground of the parish, — that portion to the south of

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the church being the one commonly used, while by a dreary symbolism the unbaptized and the excommunicated were buried in the unconsecrated and sunless ground on the northern side.

A cemetery about the church may often be made the source of considerable revenue to a parish. I have in mind a suburb of one of our great cities within the limit of which for fifteen years there was actually no place of burial whatever. Under circumstances such as must often occur with our rapidly growing towns, a very moderate investment in land suitable for the purpose (which by the way is often such as has but little value for other uses) is sure in time to return great gains, which will furnish a legitimate and often a sufficient fund for the erection of a permanent church, when the early and more temporary structure shall be outgrown; or to endow that which was first constructed. The beautiful church, rectory, and other buildings of the parish of St. James the Less, Philadelphia, were built from the proceeds of sales of cemetery-lots. Many people besides church people will be found to prefer a church-yard to a Godless cemetery; and restrictions to prevent enclosures, or extravagant monuments, which in the case of church-yards would detract from the architectural effect of the buildings, will be acceptable to a large proportion of those who seek a resting-place for their dead.

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The great value of this source of revenue can be shown by a little simple arithmetic. Suppose that ten acres are secured for the parish purposes, and that one half of this is devoted as sites for the buildings, paths, and open spaces; there will yet remain enough to supply seven hundred lots, each of three hundred square feet, which at only fifty dollars per lot (one hundred to five hundred dollars is the ordinary range of prices in suburban cemeteries) would produce thirty-five thousand dollars. This is a source of income which the Roman Catholics have been wise enough to use to their great advantage. Whoever will take the trouble to ascertain the number of lots in one of their burial-grounds, and the price at which lots are sold, may obtain a clear idea of one important element of the wealth which they are able to show in the way of church-buildings.

It is not always, perhaps not often, that the most desirable site within the parish limits can be obtained for the church, and in such cases it only remains to do the best possible with what can be obtained. Out of some such difficulties ingenious architects have produced creditable results, and I have placed the chapter concerning the choice of an architect before this one, because the advice of the architect should be valuable in the selection of the church site.

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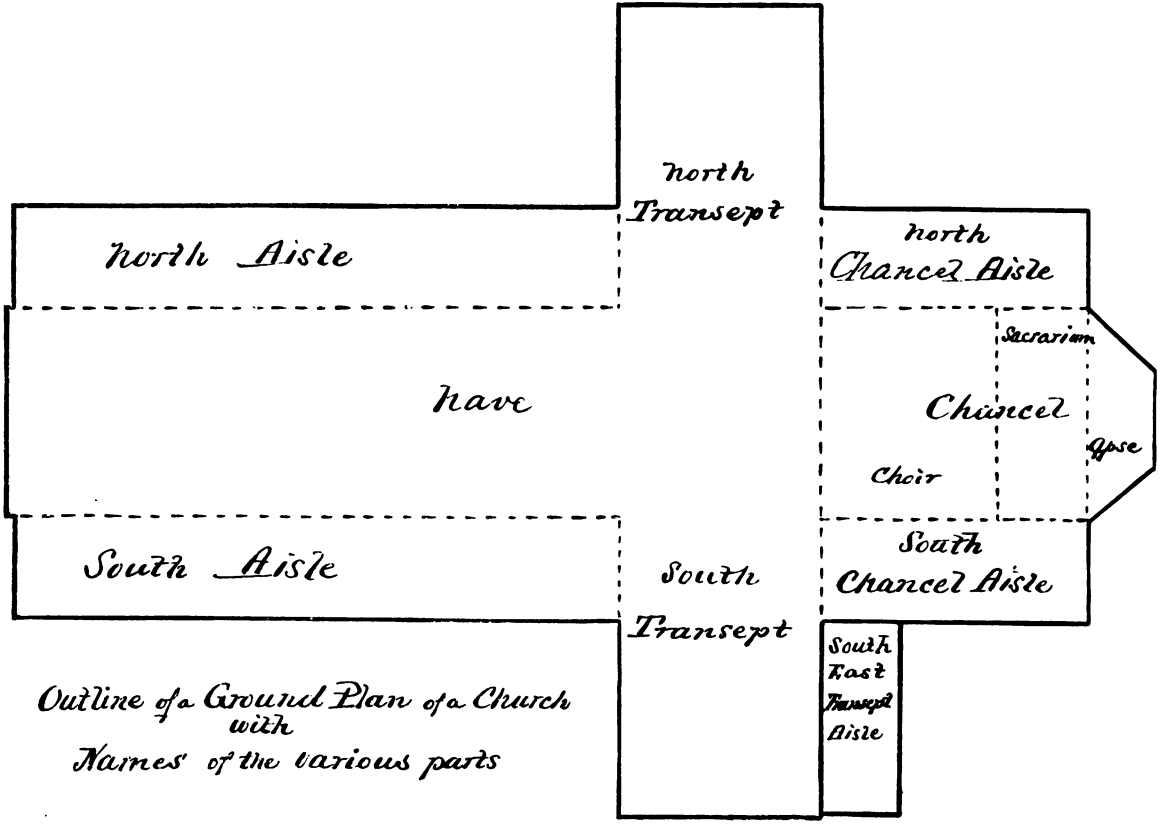

Outline of a Ground Plan of a Church with Names of the various parts

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THE DESIGN, PLAN, ETC.

A FACT always to be borne in mind is, that an agreeable-looking and proper building does not necessarily cost more than an ill-looking one. The framing and boarding for a simple wooden chapel need not be more expensive than for a country barn; but it does not follow that it must be as ugly as a barn, or that it should look like one. Many existing structures in stone are none the less hideous because they are costly. What is required for satisfactory results is good taste and sound judgment in the builders, — qualities by no means universal, but yet possible to be obtained.

As to the order of architecture, it is not worth while to throw away time in discussing which shall be adopted; that question has practically been settled in favor of the Gothic.[1] The Protestant sects and the sect of the Jesuits should be allowed the monopoly of classic and renaissance architecture. Don't expect

[1] I use the term "Gothic" in its widest sense.

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the architect to invent either a new order of architecture or any new variety of Gothic. Within the wide limits embraced by the name Gothic there is ample scope for the genius of an architect or the ambition of a parish. The last seven or eight centuries have afforded time for thousands of able men to develop the capabilities of the style. The application and adaptation of what they have wrought out, and the avoidance of the errors that they have made should satisfy modern aspirations.

There is great reason to believe that the old builders of great Gothic churches did observe a certain rule of symmetry; but, what with their failures in completing buildings as they were designed, the necessary additions from century to century of other connected buildings, and direct alterations of completed edifices, it has become perfectly evident that one item of the great superiority of the Gothic styles consists in the fact that great beauty as well as great convenience may result from or be consistent with a very great disregard for all symmetry.

The varieties of Gothic range from the round arches, unbuttressed walls, and square towers of the Lombard or Norman, through the various stages of growth and decay covered by pointed arches and tapering spires, to the last stage of perpendicular. The architect will be able to show examples, in

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engraving or photograph, of each variation; and the examination, explanation, and criticism of these will constitute a valuable item of study preparatory to building or to deciding what to build.

The weight of judgment tends to place the Geometric or Early Decorated as the highest type of Gothic architecture; but each variety has merits of its own. The Tudor is especially adapted for secular purposes, and may be used to advantage for a rectory and other parish buildings. I hope that one of these days it may be used for some of our Government buildings, in place of the inflexible and unsuitable Latin or Grecian adaptations which have been so generally used for public purposes.

When the land for the new church has been selected, and before plans are adopted, a careful study should be made as to the best manner of using the land, as to what buildings will be required not only immediately but finally, and the best position for each upon the land. If the architect be chosen before the land is selected, the selection will probably be made under his advice and with direct reference to some of these particulars, but the subject will bear repeated consideration.

In a country where towns grow so rapidly as they do in America, allowance and calculation should be made for the presumable need of increasing the ca-

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pacity of the church itself. The immediate object may be to provide a simple church and church-yard for a country village; but it may be taken for granted that a rectory will soon be wanted, and in all probability a parish building to contain social apartments, school-rooms, work-rooms, and perhaps a chapel. If the village is suburban, or so thriving as to threaten to be one day a considerable town, the extension of the church to meet the wants of a much larger population should be provided for. As to the manner of this extension I shall have occasion to speak hereafter; it is mentioned here particularly as one of the matters to be contemplated in the plans and for which space should be left unoccupied. Perhaps there will be at once a necessity for horse-sheds, and these may be so designed and so placed upon the land as to combine use and comeliness. Built along the northern boundary of the land and tastefully timbered, they will have something of the usefulness of cloisters, protecting the grounds from the sweep of cold north winds; and they may be made to shelter a path from the roadway to buildings in the rear.

A structure somewhat like a lich-gate by the road-side, from which a pathway shall lead to the church porch, will be found to be a convenient shelter from sun and rain for people waiting for, or while entering their carriages, and may be made attractive with

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only moderate outlay. A carriage-porch connected with the church was for a time a fashionable rage, but it has proved a useless nuisance. If there is a carriage driveway up to the church door, the use of it should not be permitted during service, because of the disturbing sound of wheels upon the gravelled way, and other distracting noises which are almost inevitable in such cases.

Speaking in a very general way, the church whose ground plan is cruciform is the most expensive, and that whose walls form a simple rectangle is the least costly, in relation to the accommodation provided. Transepts for seating the people are not desirable, and ordinary parish churches will be better without them. They are bad acoustically (if I may make that word), and in churches consisting of a nave and transepts the pulpit should be placed west of the transepts. A very shallow transept will sometimes be the best way to provide space for the organ, and there are cases where, for want of seasonable forethought, the only way in which the sittings can be increased is by adding a transept. A western transept may be used as a sort of vestibule or Galilee porch. A chapel or a building with rooms for parish purposes may often be connected to the church transept-wise so as to be very conveniently situated and also architecturally effective.

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Aisles should be each about one half the width of the nave if intended for sittings. Very narrow aisles are sometimes used merely for passageways to the pews.

Apsidal chancels are fashionable just now, but they are more costly than rectangular chancels, and to my mind not so agreeable. A rectangular chancel will usually allow of a great east window, and furnishes more space for the cost in the sacrarium, — that is, the space within the chancel rail. The tendency to economize in the height of the chancel often forces the windows down so low as to interfere with the proper arrangement of the sacrarium. The base of the east window ought always to be high enough to leave a large space between it and the top of the altar. In order to secure this space in a small church, where there is not room to develop a dignified pointed window, it will sometimes be better to make the east window a circular or triangular one, or, omitting it altogether, to light the chancel entirely from the sides. If the chancel is square, there should be some windows in at least one side of the chancel, to throw light upon the front of the altar and reredos; but these may be small and high in the wall, like clerestory windows.

If there is a choir vestry outside the chancel on the north, and if the rector's vestry is on the south, it

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is desirable to arrange a passage for communicating between the two without passing between the people and the altar. In a square chancel this may be done by building a reredos or screen a few feet west of the east wall of the chancel, with doors from the passage so formed piercing the chancel walls; the top of such a screen or reredos should be below the east window, and the altar may be placed against it. Where the chancel is apsidal this passage may follow the form of the apse, although this is an awkward problem to solve satisfactorily; or a passage or ambulatory may be built outside the chancel wall, as a sort of apse aisle.

When other arrangements permit, it will be a great convenience to provide space and openings in the chancel walls, so that communicants may all enter in front of the altar and all pass off on one or the other side. This is particularly needed where, as in many churches, the chancel is occupied by the choir, and there is left only four or five feet of space for the approach between. At St. Mark's, Philadelphia, the space is, I think, less than four feet.

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ESTIMATES, CONTRACTS, AND CONTRACTORS.

IT is a common complaint that, in building, the actual cost has greatly exceeded what was estimated, and the amount for which provision was made. In no case is such a result more sure to be embarrassing and discouraging than in the construction of a church. Too often it happens that after straining every nerve to obtain subscriptions, and after exhausting every resource for means, the work is begun in face of the fact that there is a margin of deficit between the estimated cost and the actual means at command. Even if those means are equal to the expected cost, a deficit almost certainly appears at the close, by reason of the excess of expenditure above the estimates; and where the first deficit is added to the last, the situation is painfully discouraging.

Now, all this trouble can be avoided if committees, or whoever has control, will but estimate intelligently and honestly. It is useless to pretend or to guess

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that your outlay will be only so many thousand dollars, when it is quite possible to know in advance what it will be. There is a sort of wilful blindness which clouds the wits of inexperienced builders; they do not want to know too much, but choose rather to run the risk, and trust to their very necessities to extricate them from almost certain difficulty. A man who does this with his own money only at stake is a fool, but he who follows this course when he is the trustee for subscribed money is a knave.

The cost of work in every department of building can be estimated with great exactness, when the price of labor and of material is established; and prudence requires that, after the most careful estimate has been made, something additional should be allowed, to cover possible changes in values, and for many trifling variations.

When this is done, however, there remains yet another cause of deficit, in such additions or alterations as may be thought desirable, or which may appear to be necessary after work has commenced. It is partly the office of this book to direct the attention of persons about to build to the consideration of the details of construction, etc., before work is begun or contracts made; and it is the want of such prior consideration that leads to many expensive alterations and unforeseen additions. Such long consideration

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of the wants of the parish, and such acquisition of the experience of other builders, as has already been advised, will have tended to reduce to a minimum the possible amount of alterations after the start has been made; but it will be well to calculate and allow for some additional cost of this nature. If your estimates are originally made with the honest determination to know the cost beforehand, and if after everything has been included, an addition of ten per cent is made to the total, the satisfactory result of an excess of estimates over cost may reasonably be expected. If when the probable cost is ascertained by these means it appears that the total is too great for the money at command, you will stand at the proper point to decide what portion of the building, its adornments, or its furniture shall be omitted or postponed in construction, or reduced in cost, by change in form or of material used. Borrowed money ought never to be relied upon for building a church, except in anticipation of some known and definite future means of payment.

It is a mistake to believe that contract-work must of course be poorer than day-work in building. In most communities there are honest builders, men of means, and of experience, who will contract for work in their own departments, and who will do the work under a contract as well as it can be done in

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any way. Their tenders may be underbid by men who are ignorant or dishonest, but here, as elsewhere in business matters, a man's character must be considered, and what you know of him is a better basis for confidence than what his selected references will tell you. One who has acquired a reputation for faithful work in your own neighborhood, and who is settled and established among you, will not be likely to damage his character by defrauding a religious body composed of his fellow-citizens and neighbors. If you must go to builders of whom you have no personal knowledge, your inquisition concerning them must be thorough, and it must extend beyond the references which they give you.

In making the contracts and specifications, your architect should as far as possible specify materials and modes, instead of describing them as the "best quality" or "best manner;" and the contracts should carefully provide for preventing gaps between two contractors for different kinds of work, and this a good architect will thoroughly understand. Where a qualified contractor offers, there is great advantage in making one contract to cover all the different trades' work in the building. Other things being equal, it is better to pay a single contractor two or three per cent above the combined tenders of several bidders, each of whom bids for the work belonging to his

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specialty. When you have received tenders from trustworthy men, add to the total of their figures liberal estimates for such other outlays as will be required, including the architect's own charge, and then increase the whole by one tenth, and you may be justified in believing that you have ascertained what the work before you will cost. But do not forget that heating-apparatus, grading, sodding, fencing, etc., are inevitable items.

Contracts should provide for substantial sureties, or for a reservation of at least one fifth of the value of work done, as security for the completion of the contract. Any contractor whose bid ought to be accepted will be able and willing to agree to this. There should be a provision that extra work shall be estimated, valued, and ordered *in writing* by the committee, to entitle the contractor to extra allowance. Payments should be made on the architect's certificate of value of work done, and disagreements should be settled by the architect, or by an arbiter indicated or appointed in the contract. The architect's approval or acceptance of work should not bar any claim for the amendment of any defect which is not an apparent one. Except in those rare cases where the supervision of the architect can be constant, there should be a supervisor like the English "clerk of the works" who can be constantly present to inspect the work;

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as his presence will prevent any bad work, or he will detect it before it is covered or irremediable.

Before any contracts are made, the committee should if possible thoroughly understand the work to be done, and also the tenor of the proposed contracts. It does not require a legal education to understand a contract; it should be so clear and plain as to be easily comprehended apart from technical words or phrases, which the architect will explain.

Architects are so commonly required to use shams that they are apt to take it for granted that their clients expect them. Plastering is not a sham; staining wood is not a sham. To sham is to use one material in such way as to imitate another, — as stucco in capitals or corbels to represent carved stone, or plaster marked off in blocks to imitate joints in stone work. Let it be understood that no shams will be permitted.

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OF THE FOUNDATIONS.

MANY stone and brick churches show fissures or cracks in the walls, caused by the variation in the pressure upon their beds, — resulting from the differences in the height and consequent weight of the superstructure.

If the ground on which the walls are to stand is at all compressible, it will of course tend to sink most where the weight is greatest; and a connected wall is accordingly liable to dislocation. It should be a prime care to equalize as much as possible the pressure on the soil, by broadening and deepening the foundations according to the increased weight of parts of the superstructure.

The foundations for a tower will require especial attention. Unless there is ledge-rock for its support, the builder must go to great depth and make wide excavations in order to get a base broad enough and deep enough to keep the tower even with the walls of the church. The blocks of stone used here should

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be larger, and the proportion of mortar used should be less than elsewhere; for not only does the ground settle under the walls, but the walls themselves settle together under their own weight.

The trenches should be wide enough to allow men to work on the outside of the foundation-walls; for it is more important that the outer face should be well laid than the inner one. The walls both in the foundation and the superstructure should be solid with stone and mortar. Masons are apt to leave open spaces in the interior of the walls, confident that if they can get them covered out of sight before the inspector comes round, the scamp work will not be detected; but a wire of $\frac{1}{8}$ inch in diameter pushed in through the mortar joints will search out the fault; and after they have been compelled to take down and rebuild a few lengths the workmen will be more particular.

If there is to be an inner wall of brick with an open space, that must be determined before the foundations are laid, in order that there may be a set-off as a foundation for the brick wall.

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OF THE CELLAR, OR CRYPT.

IF no direction to the contrary is given, your architect will make provision in his plans and specifications for a cellar under the entire church, for which in many cases there is little use and no necessity, but which is often the cause of needless expense. Under most of our churches there will be found this cellar, — a damp and dark region, one or two corners of which may be occupied by a furnace and its coal-bin, and at intervals there will be piers for the support of the floor and superstructures. This cavernous place is ordinarily strewn with odds and ends of such things as broken benches, frames once used for decorations, fragments of old parts of heaters, little piles of bricks, and dumps of all manner of waste.

I have often wondered how this custom of cellar-building came about. Except for the case of crypts to be used for chapels, it is very modern. In some of the older American, as in most European churches, it

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was the custom to bury the dead, or the more honorable or holy of the dead, within the walls of the church. It was only necessary to remove a few of the stone flags with which the interior was paved, to dig the grave, and after the burial to fill it and replace the flags, upon one of which very frequently an inscription would be cut. There are many places in Europe where the floor of the church follows more or less nearly the natural slope of the land. Some of these slope from the east down and some from the west down. The floor of the nave of Chartres cathedral follows the shape of the land so exactly as to throw all drainage to one of the west corners. There are crypts under the aisles, and there the floor is level; but the nave is on solid ground, and its irregularity is adjusted to the floors of the aisles with great skill.

Chapel Notre Dame, on Ile de Béhuard in the river Loire, is built upon an unbroken rock whose floor-surface has never been levelled, but stands in rugged uneven points.

The nave of Mitton church, England, declines very much. Entering from the churchyard one descends some steps to the nave, the nave slopes downward to the chancel screen, and at the screen there are several steps by which one may descend to the chancel.

Nor is this a peculiarity of ancient churches. A church at Gunnislake, Cornwall, opened in 1880, is

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built on mountainous ground; "to humor the site," at every few yards the floor drops a step from west to east.

In one such church — I think it is in Bedfordshire — the floor rises from west to east, and the nave columns are shortened to meet the change. The capitals and bases are all the same, and the effect, looking toward the chancel, is said to be good.[1]

The old churches and meeting-houses in America were very commonly built without any cellar whatever, but with floors raised one or two feet from the ground, the timbers being supported from below. The reason for this was no doubt because it was an economical construction, when timber was cheap, and ventilation of this space would preserve the floors. The new St. Patrick's cathedral, New York, is, I think, built much after this manner.

How it happened that the cost of building a cellar under the whole edifice came to be habitually incurred is a mystery. In many cases which have come under my observation the excavation has extended even to the tower and porches; and in some

[1] The following are among those in Great Britain which have sloping floors: Standon, Herts; Saundersfoot; Stinchcomb, Gloucester; Saxby (All Saints), Lincolnshire; St. David's Cathedral; two churches in Guernsey; Badingham, Suffolk. These cases are cited as curious, not as examples to be imitated

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instances great expense has been incurred, not only in excavating so great a space, but also in disposing of the material which was needlessly removed. The common idea that a cellar space is required to prevent dampness and cold is an error. If the proposed site is one which does not permit drainage of the ground, it should not be used at all. A cellar would not prevent dampness. The building should be so placed or so elevated as to ensure drainage of the ground, and drainage can be effected satisfactorily by using unglazed field-tiles such as are used by farmers in under-draining their cultivated lands. The lines of tiles should be about fifteen feet apart, and need be only two or three feet beneath the surface. Round tiles of one inch diameter, with collars of tile at the joints, will be sufficient except for the main drain, into which they should lead herring-bone fashion; *that* should be two inches in diameter. The side drains should not enter the main at a right angle, but at an angle of 45°, the downflow to be in the same direction in both. This is a matter which will require careful attention, that there may be no sag in the pipes, but a constant and nearly uniform decline toward the outlet. This may be very moderate; one inch in two hundred is ample.

At the outlet one length of still larger pipe may be used, and this should be furnished with a copper-wire

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screen to prevent the entrance of small animals. The outlet should be in such a situation that it can be inspected without difficulty, and it should be inspected occasionally. All of this work which is to be buried under the floor of the church should be done thoroughly and well, for to get at it when the church is finished would be very expensive, but when once done well it will last forever.

When the slope of the land permits, it will sometimes be desirable to have a crypt for school-rooms or other purposes, but the floor of the whole church should never be so much raised as to make it necessary to use many steps to enter the church (St. James, Chicago, has twelve, I think), for such an ascent is always objectionable, and especially awkward in the case of funerals. The crypt need not extend under the whole church, but may be at the east end or on one side of the building, whichever the situation favors.

The ground under the floor of the crypt should be drained as already described, and if there must be a cellar, — and in some circumstances it is cheaper to have one than not, — there should be at least one line of drain-tile two feet under the cellar-bottom to every twenty feet of width or length, unless perhaps where the subsoil is a very open one and the site is on a summit.

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With the ground drained as I have described, and the floor placed say two feet above the outside grade, and filled in with loose gravel to within four inches of the floor level, and that four inches with sand, the church-floor will be perfectly dry, and as warm as any construction will make it. In many cases the tile drain may be omitted, and the grading be completed by using a stratum of cement grouted with sand and thoroughly mixed, two inches in thickness, with good results.

If the church is to be heated by air-furnaces, and if there is no other provision for fuel, there must be enough cellar space for their accommodation, — of which I will speak when we come to the heating of the church.

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OF THE WALLS.

WOOD.

OF the various materials used for the construction of the outer walls, wood is almost everywhere in America the cheapest; that is to say, a building of moderate capacity can be constructed of timber for less money than of any other material. But it is the most expensive to maintain, and it is the least durable.

Where wood is used, it should be used openly as wood, without shamming more expensive material. One can occasionally see chapels, built of wood, painted and sanded in imitation of stone, with hollow buttresses made of one-inch boards in the same shape and size as might have been used if the building had been stone. What could be the mental condition of any one who designed or erected such parodies, I could never imagine; for they deceive no one, and if they did the deception itself would be discreditable.

In parts of our country where timber is exceedingly plentiful, very pleasing chapels have been con-

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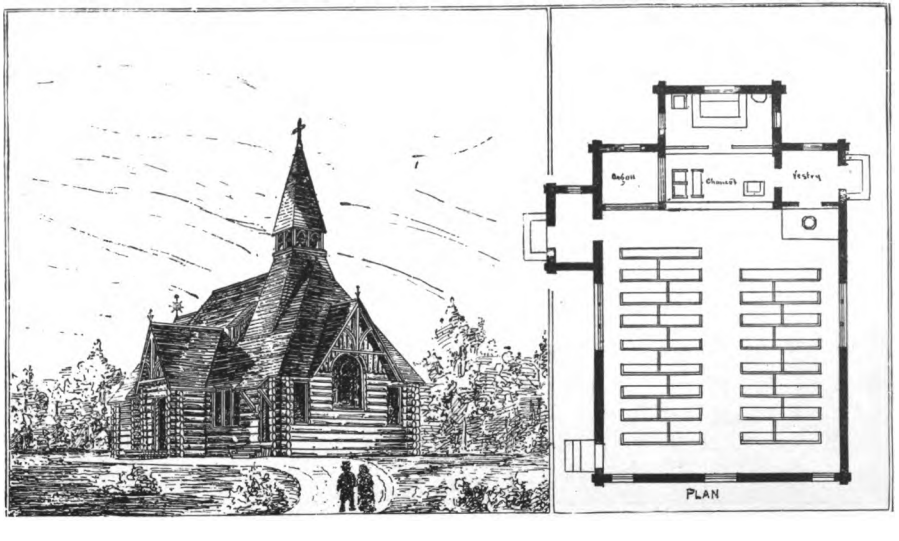

ST. JOHN THE EVANGELIST, ADIRONDACKS.

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structed with walls of logs overlapping each other at the corners; and where saw-mills are at hand to cut the logs into square timbers, the same general mode will produce a building admirable in construction,—not so effective in appearance, but one which will endure longer. Either of these walls can be covered and finished externally and internally so as to conceal the rudeness of their structure; but this rudeness of itself constitutes an element of beauty, which can be aided by covering the roof with bark, tiles, clumsy shingles, or coarse thatch. Even in such primitive buildings the church should be placed so that the ground beneath can be thoroughly drained and kept constantly dry, or, in warm climates, so that the air may circulate freely beneath the floor.

It will be quite satisfactory and much cheaper to put the windows of a log building in the gables, or in a long row of small lights just below the eaves, or both. This avoids severing the logs between supports to provide window spaces.

The next grade of wooden buildings is suited to such places as can supply, at moderate cost, dimension lumber, sawed, planed, tongued, and grooved. Of this grade are the battened buildings once so common in our country parishes, where the outer walls are of boards or planks set upright and dovetailed together, the joint being covered by a strip to keep moisture

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and cold out of the crevices. Or the outer walls may consist of boards nailed to the frame horizontally, each board overlapping the one below, or again, of a rough-board wall covered with shingles or clapboards.

In all these cases, in cold climates, a double wall is required, to keep out excessive cold ; and this is usually made by furring inside the frame or between the principal timbers, and spreading plaster on lathing nailed to the furring. Sometimes this protection is reinforced by back plastering, — that is, by plastering against the inner surface of the outer wall. In the ordinary way of furring, the space between the plaster and the wall is too often the cause of the entire destruction of the building, furnishing as it does food, concealment, and draft for the spread of fire. It affords some protection to fill in this space with mortar or grout at the level of the floor so as to check the draught of air, and the use of wire lathing and back plastering will give yet further assurance against this danger.

Plaster is an honest material for an inner wall, but it should be treated honestly as plaster, and not lined off in imitation of stone. It should never be smoothed to what is called hard finish ; but a certain degree of roughness is better, whether it is left entirely plain, or tinted, or used as a ground for decoration.

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TRINITY. CLAREMONT, N.H.

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In the construction of wooden churches there is apt to be too much straining for Gothic effects. Many of our older churches were distinguished externally from other places of religious assembly by the pointed arches of the windows, the pointed portion being sometimes a sham; and when the builders had painted the building white and the outside shutters green, they seem to have flattered themselves with the idea that there was some resemblance between these structures and the Gothic cathedrals of the old world. The "little brown barns" of a later day, their battens suggesting "perpendicular" work, were an improvement upon their green and white predecessors; but these were often marred rather than improved by the addition of mullioned windows and pretended buttresses. The truth is that the use of wood as a building-material for churches implies the want of means to use a more expensive material, and timber churches, like some people, become vulgar chiefly by pretending to be what they are not.

Instances are not wanting to show that it is possible to construct of wood a seemly, churchlike, and even a Gothic building which will plainly acknowledge its wood-ness. Such an one is Trinity Church, Claremont, New Hampshire, designed by Mr. Henry Dudley of New York, which makes a very effective exhibition of the capabilities of timber. Instead of

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buttresses, large timber braces appear externally, as do also the main timbers of the wall framing. Excepting the places — two in the tower and one in the porch — where the timbers were cut to a curve, the whole treatment is admirable. When this church was built, more than thirty years ago, it was severely criticised by practical mechanics, who declared that the joints would decay beyond remedy in ten years; but a recent examination has shown that the frame is yet entirely sound. The joints were protected from the weather by sheet-lead; and with careful supervision the church will last as long as any building of wood. It cannot be expected that any construction of wood will compete with stone as to durability, but there are several in this country which are one hundred and fifty years old and are still sound and strong. All that is required to prolong their existence is watchful care and prompt attention to painting and needful repairs. There are timber churches in the north of Europe hundreds of years old, and used to this day.[1]

[1] St. Andrews Church, Greenstead, Essex, is perhaps the oldest wooden church in existence, and is said to have been built in the year 855. The nave is probably all that remains of the original building. It is built entirely of wood, — the trunks of chestnut or oak trees, split and edged, forming the sides. These are set upright and close to each other, and are let into a sill or plate and fastened at the top with wooden pins.

There are eighteen of these timbers at the south side, two of which are squared for the door-posts, and here, projecting from them, is the

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BRICK.

ARCHITECTS of our day exhibit great cleverness in the use of brick as a material for buildings of pretension and of character, and much may be expected of them in its use in the construction of churches; but there is too strong a tendency to take it for granted that brick implies the use of face-brick. Smooth surfaces are to be avoided in church walls, and good, hard, well-made bricks will make a more satisfactory outer wall than the best of fine-grained face-brick. It is not well to place much reliance upon the use of black bricks, although these have their place; but it is better to make use of purpose-made bricks in projecting mouldings and cornices, and for string courses, set-offs, etc. Some such were used in brick buildings of our Colonial days, specimens of which can be seen in St. Peter's and Christ church, Philadelphia, in the Old South meeting-house at Boston, and elsewhere.

porch. Twenty-one unhewn and five squared are on the north side, with two vacancies filled with plaster.

A boarded tower with spire is built against the west end of the church, and at the east is a chancel of brick. Both sides are strengthened with buttresses which are much later than the body of the church, as also are the roof, chancel, tower, and spire. It is now shingled, but originally was probably thatched.

The nave is 29 feet 9 inches long and 14 feet wide; the height to the junction of the roof is 5 feet 6 inches. [See Corner's Rural Churches, 1869.]

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The use of brick as a building material may perhaps imply the exclusion of the later styles of Gothic, as brick cannot be used advantageously for elaborate mullion work. The lancets of the Early English and round-headed window-arches can be made with purpose-made bricks, bevelled or shaped to make drip-mouldings, and for the embrasures, string-courses, etc.

Of course, if cut stone is used for window-arches, and wood or stone for mullions, brick may be used in any style; but to my eyes these combinations are not commonly agreeable.

The outer courses of red brick walls should be laid in black instead of white mortar, the effect of which is to change the tone of the building from a color bordering on pink to one almost brown. Red bricks may also be used in the interior, but they should be used with moderation and limited to decorative purposes, for interior piers, chancel-arch, about windows and doorways, etc. Where the bricks used outside are of the light-colored kind, such as Newark or Milwaukee brick, they also should be laid in dark mortar, and the covings and quoins should be of red brick or of some stone of a color darker and warmer than the bricks themselves.

An interior brick lining may be used in connection with stone walls as a furring for carrying the plaster,

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ST. JAMES, LANCASTER, A.D. 1886.

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and in structures of brick the walls may contain an air-space which will prevent dampness from penetrating the walls, and allow of plastering upon the interior surface, — thus avoiding the great danger of fire which attends wooden furring. The construction of these hollow walls is now generally understood by builders. Flat strips of copper, twisted, should be used to connect the two walls when metallic support is required. The brick wall for plastering should be of rough brick laid as true as possible. The use of woven wire in place of laths to carry and hold the plastering is likely in many cases to supersede hollow brick walls; as it makes it easy to lay a good plaster surface, creates air spaces, and makes the wall fire-proof at moderate expense.

Another interior face may be made by using light colored bricks without plastering, but plaster is very desirable as a base if decoration is proposed.

STONE.

THE best material, no doubt, so far as exterior appearance is concerned, is rubble or rough ashlar stone. Stones which have been water-rounded are not desirable, and if they are used the wall must be thicker or more heavily buttressed, and must be frequently bonded with brick or with other stone. Rubble and ashlar walls should be double-faced, well-

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bonded, and cut stone or brick will often be required about the doors, windows, and cornices, and sometimes at all corners. There is a church in Connecticut which I have seen from the train on the New York and New Haven Railroad, built of blocks like those used for Belgian pavement, and which struck me favorably. What builders call drawing or pointing of stone-work is not only an unnecessary expense, but it injures rather than improves the appearance of the walls. The stones ought to have all necessary mortar when laid, and open joints are better than filled joints. The trowel may be used to shape the mortar in the joints so as to shed water outward, and yet leave the lines of shadow beneath the overlying stone. It is difficult to make people realize that in church-building a certain amount of roughness in the walls is essential to beauty. The log walls of a rude chapel will be more agreeable to the eye than the smoothest of painted boarding, and rough stone or brick is far more acceptable than smoother work. Stone dressed to a smooth face should never be used; and beyond the squaring of blocks, labor expended in tooling, fluting, etc., is worse than thrown away. If the interior face of the wall is to be of stone, that should be dressed enough to make a reasonably even but not smooth surface, and the faces should be dressed to make close joints.

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For the more costly churches there is really more information to be obtained from architectural works than for the less expensive ones. Studies and elaborate descriptions of cathedrals and great church-edifices are abundant. The number of smaller churches in Europe which are worthy of imitation for their style is wonderfully small. On reference to any book of engravings it will be seen that the churches which are represented, although very picturesque in a landscape, are very rarely such as any one would desire to reproduce for his own parish church. Many of the recently built churches of England and America are much better worthy of imitation than those of mediæval times. It is true that very many of the latter are worthy of study for some portion or some feature or detail of their architecture, such as a tower, doorway, or window, the mouldings, etc., but there is as much of ugliness as beauty in the average of the smaller churches of the early days.

So, too, of foreign and ancient modes of construction, — while there are in them interesting and valuable matters for consideration, there is as much of warning as instruction to be obtained from their study. It is evident, too, that "scamping" was not unknown to the old builders. New times require new modes. Walls built without any attempt to prevent dampness, and churches with no arrangements for heating,

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would not suit our ideas as to health and comfort. Roofs with two or three ridges side by side, such as are common in England (where roofs are often covered with lead), would be open to great objection in our northern winters, of alternating snow, and thaw, and frost, or in the deluge-like rains of our Gulf States.

There are many examples of the combined use of brick and rubble in this country, and a very moderate range of travel would enable one to see a wide variety in the treatment of rough stone walls. In the building of towers somebody should see to it that the stone selected is sufficient to bear the pressure. They should be built of flat faced-stones, and the walls must be well and frequently bonded. Look to the quality of the mortar used; one third cement to two thirds lime, one part of these to two parts sharp sand, will ordinarily make a good mortar, but in such points and especially as to the characteristics of the local lime, intelligent masons of the vicinity are apt to be good authority.

Whatever be the material used, avoid giving to the exterior such combination of color as will leave the outlines of a shade or color lighter than the body of the walls. It is better that the outlines should be decidedly darker, rather than at all lighter, for the latter leaves the outline dim and the architectural forms confused.

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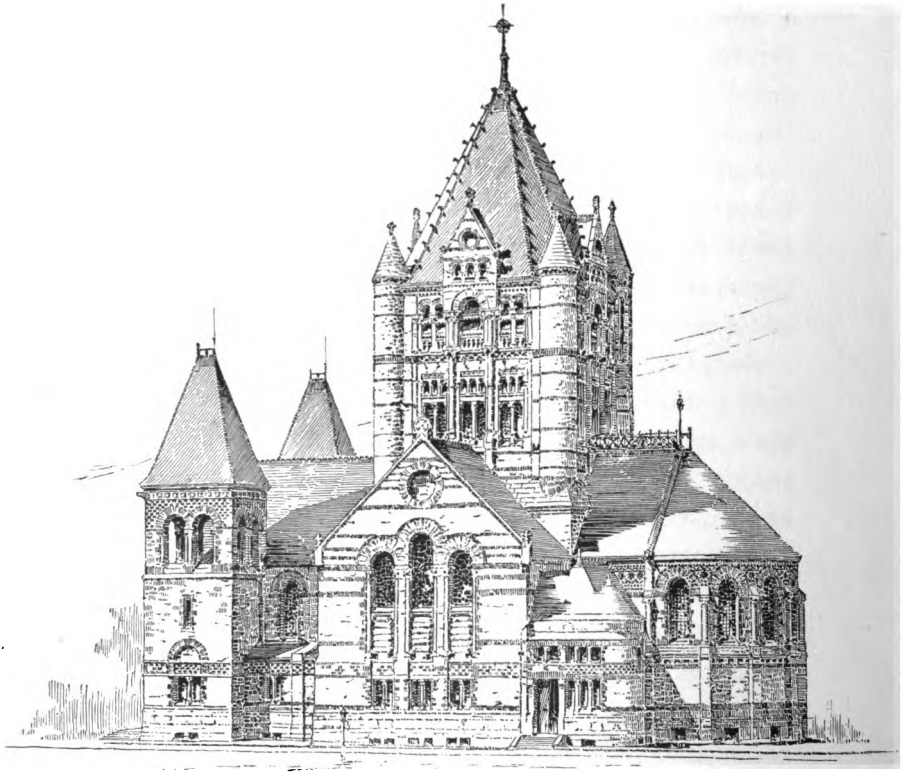

TRINITY, BOSTON.

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No church exterior can be improved in appearance by covering its roof with stripes or figures formed in vari-colored slate or by painting. What color is best depends upon many considerations, — observation of other and completed buildings will be the best test, — but generally speaking the darkest will be the best. Paint pays for its use in the preservation of shingles. Dip them in the paint before laying, or paint each course as it is laid. Painting them after they are all laid will shorten, not prolong their usefulness.

In building Gothic churches the error most common is that of building too high for the length. It would not be easy to find an instance in which a church has been seriously injured in appearance by being built too low. Even the Church of the Transfiguration in New York city, with very low walls and surrounded by much higher buildings, is not unattractive. Very many of the churches in England are not so high above the surrounding grade as they were when they were built, partly owing to the burial of generation after generation in the dust of its predecessors, and the consequent rise in the level of the church yard; but the rarest of all criticism on English churches is that they look too low. Moderation in the height of walls and ridges is necessary to give to any Gothic structure that appearance of repose which is one great attraction in the style.

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City churches are peculiarly apt to err in this respect, and there seems to be a belief that height is required to give the idea of size; whereas excess in height, will make a building of considerable length appear smaller, instead of larger. It should be remembered, too, that increase in the height of the building, particularly one of brick or stone, causes a very great increase of cost; and yet, in the case of churches, gives no increase of accommodation. This increase of cost has a double origin; first, the walls, buttresses, etc., must be thicker, to sustain the greater weight; and second, a part of the material must be raised and handled at a greater elevation. In a tower and spire this variation in the cost per cubic yard becomes very great indeed, and the upper third, although containing less material than any other one third, may cost more than the lower two thirds of the height.

Excess of height is liable to cause very great difficulty as to the acoustic properties of the church. Sir Edmund Becket notes that he has known churches improved acoustically, as well as architecturally, by being lengthened; and many of our cities offer examples of churches which would be improved in both these particulars by being lengthened.

If the building is cruciform, the ridge of the chancel and the transepts should be of the same height as

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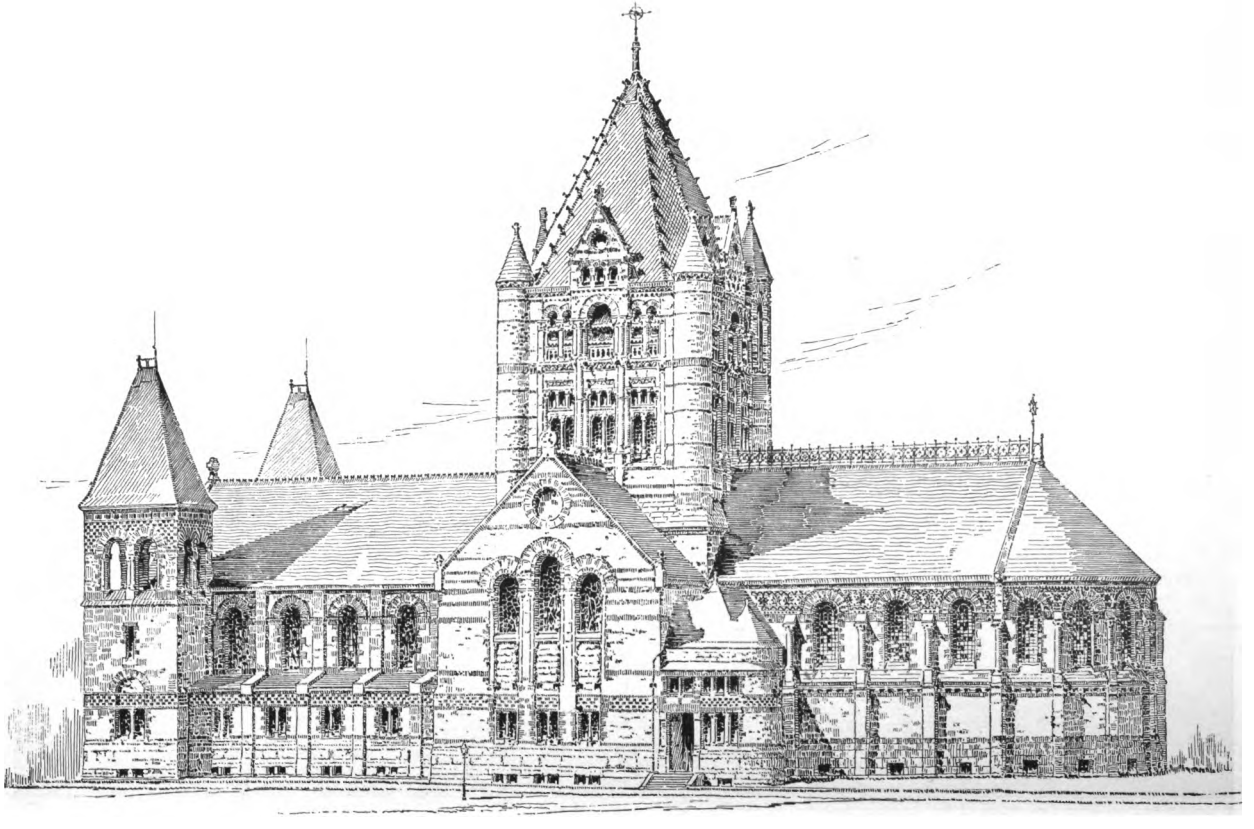

SKETCH TO SHOW THE EFFECT OF INCREASING THE LENGTH OF TRINITY, BOSTON.

(Compare with illustration, page 57.)

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that of the nave, and the difference in height between the chancel and the nave, ought never to be great. The cathedral of Long Island at Garden City is deformed by the reduction of the height of the sacrarium as compared with the nave and choir. The cathedral is not a large building, and the sacrarium loses all the dignity which it might have possessed, if the ridge of the choir had been continued over it and the eastern termination had been rectangular instead of apsidal. As it is, in order to preserve the necessary proportions, the bishop's seat is reduced in appearance to the size of a child's. It would have been better not to attempt a basilican arrangement. The fashion of our day tends toward reducing the height of chancels, and some costly churches have been dwarfed by such treatment.

A break between the chancel and nave outwardly where there are no transepts will often be a relief, but this may be effected by a very slight difference in elevation, or without that, by carrying the east wall of the nave up through the roof, and covering it there with coping. Any reduction in the height of the chancel ridge ought to imply, or ensue from, the reduction in the width of the chancel, — that is to say, the angle of the two roofs should be the same.

It is a common mistake to set the windows too near the outside of the walls in stone and brick churches.

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If the walls are three feet or more thick, it will do to put the windows midway in the thickness of the wall, but if the walls are less than three feet the windows, unless they are quite narrow, should be placed nearer to the inner than the outer face. The effect of depth of the window recesses as viewed from within, especially where the windows are pictured, is almost nothing; whereas on the outside, it gives shadow effects which emphasize the appearance of solidity to the walls, and this is always a desideratum in Gothic structures.

The fact that doorways are almost always deeply recessed tends to make the want of shadow about the windows all the more noticeable.

OF BUILDING BY INSTALMENTS.

THE first and absolute needs of a parish are shelter from the weather, and a decent interior; and when the means at command are small, these may be secured by a simple rectangular chapel, unpainted and unplastered, whose chancel, porch, and sacristy may be partitioned from the interior; but such a building may be calculated for future enlargement by the addition successively of chancel, porch, aisles, transepts, vestries, etc., by which the capacity of a building for seats may be more than doubled. The unwillingness of parishes to use an incomplete building, and the desire on the contrary to have

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everything finished, to the last pinnacle, at once and without delay, is the source of much that is bad in architecture. This induces weakness in details, disproportion between parts, and shams in construction. Churches should be built to endure for generations, and should not be spoiled by heedless impatience. Many a parish, which might have built a good substantial nave, leaving it for time to enable the addition of chancel, aisles, transepts, porches, tower, spire, and vestry, thus attaining according to an original plan to a creditable edifice, — has undertaken to complete all of these in Liliputian dimensions and inferior materials, and now, crushed down with debt, bemoans its shortsightedness and folly.

One way to build by instalments is to lay the foundation for the whole church and to build only a part of the superstructure. It is comparatively a simple thing to extend a wooden building, but if the aim is to build a stone or brick church, the entire building or the nave may be completed, buttresses and all, up to the sills of the lowest course of windows, and the rest of the walls may be temporarily of wood; these may be built so as to permit the completion of the walls without greatly disturbing the interior, and look well all the time.

If the intention is finally to build a church of chancel, nave, and aisles, of stone or brick, the nave may

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be built first, and the clerestory and roof of the nave, as also the supports for the clerestory walls, may be those intended to be permanent, and the remainder of the north and south walls may be temporary only. The aisles may be added one at a time if desirable. If the church is to consist of a nave and chancel, it is usually best to build the nave first if all of it cannot be built at once, because it gives more accommodation than the chancel would give alone; the window which is to be that of the chancel can be placed within the chancel arch *pro tempore* and the necessary partition can be made within the nave for the temporary chancel, vestry, and choir-room. If it is decided to build the permanent chancel at first, and if any portion of the nave is to be built, it is always desirable to build the walls of the whole of it, as it is easier to connect an old nave and a new chancel than to join two parts of what is to be a continuous wall. In such cases, a permanent chancel with a temporary nave may be the best solution.

The parish of the Advent, Boston, built first the chancel, side chapel, and organ-room, — being the entire east end of the buildings, — and used them for a year or two before building any more. This temporary accommodation would have been tolerably convenient if they had placed their altar for the time against the west wall of the chancel.

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It is not a simple problem to build in sections and yet have the part which is finished appear well proportioned, but even this is sometimes possible. It is not essential, however, to do so; on the contrary, the manifestly unfinished appearance will be a constant reminder and stimulant to the completion of the work.

The best way for a parish to keep within its means may be in some cases to build the essential parts of the entire structure — its walls, roofs, and flooring, — leaving them in the rough, — preparing the interior for temporary use, and proceeding with the remainder of the work as the means are afforded.

If an honest estimate of the total cost of the building, its finish, furniture, and decoration is first made, it will usually be safe to proceed to build those essential parts with one half of the money in hand. The other half may be supplied little by little for the non-essentials, in which class I put painting and finishing wood-work, plastering, permanent seats and chancel furniture, artificial lights, stained glass windows, organ, carpets, cushions and kneeling benches, tower and spire, and decoration of walls.

Besides the common-sense and honesty of this method, it will be found that every little step toward completion will furnish its own pleasurable satisfaction.

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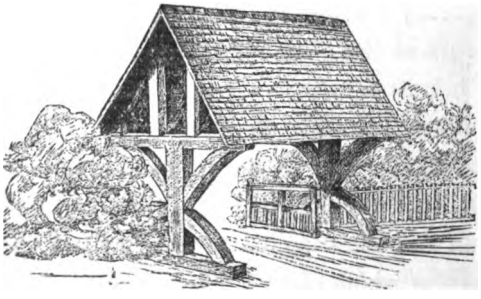
Note well the fact that it is a great deal easier and a great deal more pleasant business to obtain subscriptions for completing an unfinished building than for paying off the mortgage debt on a finished one.



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OF THE FLOORING.

THE flooring may be of wood, tile, or stone. Ancient European churches were usually paved with flags of stone laid directly upon the ground, and when tiles were used they were laid in the same way. Where there were crypts they were substantially arched, and thus furnished ample support for flagging. The churches in those days were constantly in use, but nevertheless they were habitually cold, and both floors and walls were damp; but there seems to have been no known way to prevent it, and therefore people got on as they could. It should also be remembered that there were no pews then.

Stone has the merit of endurance, and does not give the same resonance to the tread as does our common wood flooring; but in buildings which are not kept constantly warmed it is objectionable because in our winters it retains the cold. The tendency of stone to absorb moisture from the ground can be cured by using cement grout as a bedding for the

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stone. Large stone flags, properly laid, make an excellent flooring for the passage-ways and open spaces.

Tiles can be used over a wood flooring, but it is almost impossible to keep them firmly in place when so used, and the result is apt to be unsatisfactory; it is better to bed them in grout, and best of all to lay a brick floor under them.

In our climate wood will usually have the preference for church floors. If there is no cellar, blocks of wood may be used as a pavement, but perhaps the best construction is to set strips of board on edge in the sand or concrete and to nail the floor-boards to those strips. In such cases only one thickness is required for the floor.

When there is a cellar, or when the floor is timbered, double floors should be laid; the lower one may be of rough cheap boards, but care should be taken to make it even, or the upper floor will be apt to creak. A layer of felt or very thick paper between floors will prevent creaking, and tend to prevent cold and dampness rising from the cellar. When the upper floor is not to be carpeted, the floor of the passage-ways should be blind-nailed, which prevents the nails working loose and makes a better, and a better-looking floor. Dowelling with wood pins is better than matching for boards of an inch or less in

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thickness, the cheeks of which are too slight when tongued and grooved. The best woods for floors which have to bear hard use are maple and birch, but hickory and southern pine will answer very well. Floors made of woods of contrasting colors should be avoided, except that parquetry, which is a sort of wooden tile, may be used to advantage in a chancel, or as a border in the passages, where tiles cannot be obtained.

Carpets are and will be used very generally in the pews, if nowhere else, because they are pleasant to the feet, and prevent dust soiling the clothing. I shall speak of them in connection with interior decoration.

Very good tiles for indoor use are made at Lebanon, Penn., from the slag of the iron furnaces. They are about ten inches square, a little over an inch thick, and stamped with a pattern to roughen the surface, which is of a very good neutral tint. These tiles, besides being impervious to moisture, have the merit of cheapness, costing, I am told, only about five cents each.

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TOWERS AND SPIRES.

IF the lower storey of a tower is to be used as the chief entrance porch, it will usually be placed either at the west end or at one of the west corners; for to have a passage-way dividing the pews into east and west blocks is almost universally objectionable; the only exception, if indeed it be one, is when the space to the east of the entrance suffices for the usual congregation. The space west of the tower-porch in the cathedral at Portland is used for meetings of the diocesan convention, and a large part of that in the Frederickton (N. B.) cathedral is devoted to a baptistery. Such spaces may be used for Sunday-schools but however used, if only occasionally, it will be better to separate the two parts by a screen, which may be removed if the space is needed to accommodate an unusual number of worshippers.

If the tower is placed in the angle between the chancel and the east end of an aisle, the lower story may be utilized for a vestry, for a baptistery, or, if

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the aisle is separate from the nave and used as a chapel, the subsidiary chancel for the chapel may be in the tower. It should never be used for an organ-chamber.

Wherever the tower is placed, if on the ground, the lower storey may be an excellent place for a mortuary chapel, which is elsewhere recommended. The occasional use for this purpose will not prevent other occupation of it.

If the church has aisles, a tower at the intersection of the nave and transepts implies supports so heavy as to interfere with the use of the aisles by hindering those who sit there from seeing the chancel. The proper use of a lantern or tower in such position may be limited to the case of a cruciform church without aisles; and then the nave, chancel, and transept should be of equal width, so that the tower may be square, as at St. Mary's, Burlington, N. J. The cathedral at Frederickton, N. B., is faulty by reason of neglect in this particular.

A tower is by no means a necessity, nor does a tower necessarily imply a spire; the former may be useful in its lower stage for purposes already named, and above that for a sexton's room, and yet above for a ringer's room and for bells; but the spire is merely ornamental or monumental. As such it is more apt to be injured by over-adornment than by plain treatment.

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It is well that it should have apertures or projections to facilitate the erection of a staging, in case of needed repairs, without building one from the ground, but these should not be made prominent architectural features.

The beauty of a spire consists in its clear and clean upspringing from the tower. It should not appear to overhang the tower, nor should its base be much less than the summit of the tower.

When there is no tower, a bell may be hung in the gable over the chancel arch, or at the west end, or in a turret anywhere.

Remember seasonably that the lightning rods may, and had best, be bedded in the masonry of tower and spire; they should be made of copper, and no insulation is necessary, but care should be taken to obtain a good ground connection. Remember also that a staircase will be needed for the tower; this fact is sometimes forgotten, and a staircase has to be provided by pinching the space required for other purposes.

BELLS.

If there is to be a chime of bells, that fact ought, of course, to be taken into consideration in designing the tower.

The modern manner of ringing the chimes does not require the same increase of strength as did the

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olden way, but a ringer's room will be required, and it is desirable that openings in the bell-chamber should be provided of sufficient size and in a proper position to allow and to favor the free passage of sound. These openings should be partially, if not wholly, above the roof-ridge, and the bells should be hung so that their mouths should always be two feet at least above the sills of the windows.

The bell-deck should be covered with lead or other water-shedding material (cotton duck, kept well-painted, will answer very well), and provision should be made for the escape of rain-water from it. By this precaution the louvres (vulg. luffers, Fr. *l'ouvert*), so disagreeable to the eye, and so deadening to sound, are rendered needless.

If you have not enough money to pay for a good large bell, wait until you get more, rather than buy one which merely tinkles. The tone of a church bell should be dignified. It is well, if you can afford it, to have more than one bell, so that the parishoners may be informed or reminded by the sound whether the service to be held is Holy Communion, prayer, or litany. With a chime or carillon such intelligence may be given by the tunes sounded from the belfry; and a rural parish may learn from the bells that a child is born, a friend from over seas returned, a maiden married, or a neighbor dead. With one bell

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the people of our New England towns were formerly told of a "passing" soul, whether it was man, woman, or child, and of its age.

Inscriptions on bells need not be limited to scripture quotations, nor even to solemn words. The olden custom was to give fancy free play in wording them. I was once invited to propose inscriptions for a chime of bells for the tower of a church named "Grace Church," but my suggestion for the rector's bell — "Angels and ministers of Grace defend us" — was not appreciated.

It is worth while, whether you have a chime or only a single bell, to direct the founder to take notice of the tone and key of other neighboring bells, so that needless discords may be avoided. If we do not agree with our neighbors in our religious views, we may certainly allow our bells to harmonize with theirs.

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PORCHES, VESTIBULES, AND SPACES.

IT is always very desirable to have vestibules, to prevent gushes of cold air entering the church when the doors are opened. These may be inside the walls if necessary, but outer porches are better, and they are often very attractive features of the building. At least one in each church should be so spacious as to afford room for arranging processions at weddings, funerals, etc., in a seemly manner. Such a porch will render inexcusable the bad custom of making the church itself a place for neighborly gossip and chat. The doors should be sufficient in number and size to permit the rapid outflow of a full congregation, and, for the safety of the congregation in case of fire or panic, should be so arranged as either to open outward, or so as not to offer great resistance to the exit of the people. If there is to be but one entrance to the church, it should be on the southern and warmer side if possible, and in the cold season it would be better not to use northern doors for entrance when the others will suffice.

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Exterior doorways, porches, and towers, should never be set obliquely to the walls of the building. This is one of those eccentricities which some architects affect. I have seen them often, but never without disgust.

Avoid scrimping in respect to open spaces as much as possible, especially about the chancel, the door-ways, and in the passages. Any width in the central alley less than six feet is too little for convenience; but four feet, or even three and a half feet, will suffice for those at the sides. Unless the chancel is spacious, six feet or more should be left just outside the chancel steps.

These spaces, with ample doorways, will permit the speedy *debouchement* of a congregation. They are important in case of funeral ceremonies, and desirable whenever on occasions of confirmation or marriages a number of people must be gathered near the chancel. This room is not lost, for much of such open spaces can safely be utilized in case of need, by using movable seats. Indeed, it will often be well to leave as much as one third of the floor unoccupied by pews, because if the pews will ordinarily suffice for the congregation, it will be more condensed; while any unusual attendance can be provided for *pro tempore*. It is very desirable to induce the people to sit near together, and near to the chancel, and to prevent that want of sympathy which attends upon the isolation of individuals in a scattered audience.

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THE MORTUARY CHAPEL.

THE ideas of our time demand that several days, three, or two at least, should elapse after death, before burial. The tender and reverent bestowal of the corpse during this time is a matter of constantly extending difficulty. To the poor, living in one room, to families, boarding or occupying suites of rooms in hotels, or in the case of single individuals, or persons dying away from their kin, or distant from the place of burial, the temporary disposal of the dead, awaiting burial, is difficult to accomplish in a manner consistent with the respect due to the memory of dear friends, and without rudeness to the feelings of those bereaved. It is not pleasant to consign the body of one who was but yesterday of our own family circle to the storeroom of an undertaker, or to the dankness of a receiving tomb, but it is often necessary. To provide for such cases, what fitter arrangement is possible than a seemly chapel connected with the parish church, where, if desired, a watch may be

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kept, and whence the body may be followed by the mourners to the burial service in the church, and onward to the grave?

The lower stage of a tower may sometimes be made available for this use, or a chapel projecting porch-like may be constructed for this purpose, or yet again, a portion of the crypt, if it be not too gloomy, may be arranged to answer.

I would suggest a substantial arrangement for *suspending* the bier, a little above the floor; and there might be provision for automatic alarm in case of any intrusion, or in the rare cases in which suspended animation is mistaken for death. A *prie-Dieu*, for the use of a watching friend, would not be amiss.

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THE VESTRIES, ETC.

THE best position for a vestry is ordinarily on the south side of the chancel, with which it may be connected by a doorway or passage. Let there be a plenty of good window-openings in it, and do not fill the windows with stained or ground glass, but give the sun free entrance, as this will often be the place preferred by the rector for his study; and it should be provided with an open fireplace, a library table, lamps or gas-fixtures, and with one or two presses or chests of shallow drawers, for vestments, etc. There should be a water-closet somewhere upon the premises, and a safe or vault, for keeping the church plate, and parish records and papers. This vestry should have easy connection with the body of the church.

Where there is to be a surpliced choir, as there will be one day in almost every considerable church, a choir-room will be needed large enough for rehearsals, and with conveniences for lighting and heating,

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independently of the system used for the church. In it there should be enough shallow closets to allow of hanging all the surplices and cassocks on separate hooks; these will occupy but little room, and sliding doors on Prescott hangers will be the best for them. This apartment may be made useful for other parish purposes.

Very frequently one room may suffice for the rector and the choir, but when they are separate, there should be a door, or passage-way, connecting them; and the entrance to the chancel should be from the choir-room. If there is a parish building, with apartments for work, school-rooms, or rooms for social gatherings, some of these rooms may be used also for vestries, and the whole may be annexed to the church, and made very effective architecturally.

The sexton must be considered in the plans. If the church is habitually open, a room may be provided for the sexton in the upper part of a porch, or the second stage of the tower, with an opening through which he can see into the church.

There must also be provision for keeping the various utensils needed in the care of the church and church-yard, — brushes, brooms, cloths for covering the altar, etc., lawn-mowers, hammer, nails, cords,

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etc. A section of the horse-sheds, or a room in the cellar of the parish building, may be utilized for keeping at least the more cumbrous things, — such as frames for holiday decorations, the bier, saw-horse, ladders, etc.

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THE BAPTISTERY.

OUR branch of the Catholic Church, acknowledges only two sacraments, "as generally necessary for salvation." For the celebration of one of these, provision is made in the chancel, the most prominent place possible, while for the other, very often no place whatever is set apart. It seems hardly credible, but history tells us that Bishop Griswold, some fifty years ago, declared that he had never known baptism to be administered in any church except at the chancel rail; and the advanced churchmen of his day, who set up stone fonts outside the chancel, troubled the good bishop mightily by their innovations.

Traditionary symbolism connecting baptism, as the entrance to the Church Catholic, with the porch as the entrance to the church edifice, led to the ancient custom of placing the font at or near the west end, which arrangement, if used in our day, often obliges the people to turn their backs upon the celebration. When fonts were first placed in that part of the churches, there were no pews to hinder the people

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from facing either way, and baptisms were very generally entirely separate services.

A position at one side of the chancel, perhaps between it and a porch or vestry door, will be found entirely convenient, more consistent with our ways, and tending to more reverence in its use. In large churches a recess, or a side chapel, may well be constructed for the baptistery. A font so large as to permit the immersion of an infant would seem to be contemplated by the rubric, and it should by all means be not only a fixture, but one of a character to comport with the dignity of the place, and the sacrament. It should stand upon a dais or platform raised one or two steps above the floor, having ample space for the minister, and there should be room about the font for sponsors to stand and kneel.

The best material for the font-cover is cloth, which can easily be removed and replaced. It may be of the color of the season and embroidered with suitable devices, or it may be a plain cloth of dull color. A book-rest should be provided in some convenient position, supported by a standard from the floor, or a bracket from the wall; the want of it is the frequent occasion of embarrassment to the clergyman.

If the font cover is a flat and wooden one, it may be hinged and so arranged as when open to provide a rest for the minister's office-book.

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OF THE CHOIR PLACE.

IN order to decide where, and in what manner the choir should be placed in the church, or what constructional arrangements are required for their accommodation, it is necessary to understand what is the duty of the choristers, and what is the office of music in the church.

The sectarian idea appears to be that which prevails among newspaper writers. My local paper of to-day, describing a religious meeting in the town last Sunday, closes by saying, "A good number were present and profited by the earnest words of the pastor, and *also enjoyed the excellent music* from the large choir." The italics are mine, and show what is the ordinary and average opinion of people outside the church, as to the object of introducing music into a religious service,— namely, the enjoyment of those present.

I do not think that this idea prevails to any extent within the church, although it exists no doubt spo-

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radically. But with us the erroneous idea is apt to be that of the artistic musician who enjoys good artistic music, and to whom rude singing is in some sort a pain. He argues that it is our duty always to offer to God of our best in everything; that consequently artistic music, being the best, is what should be used in the church service, when it can be obtained. This view, it will be observed, would exclude congregational singing entirely. For the best singers only would be allowed to sing at church, when the art idea prevailed.

I have often wondered what these musical people imagined to be occupying the thoughts of the great unartistic majority of the congregation, while a trained choir was wandering through the labyrinthine mazes of some fine anthem, to the delectation, I assume, of some few of those present.

The true church idea of music in the service is that it aids the people to attain, or maintain, that devotional feeling which is needed for real worship. So good a musical authority as Mr. J. S. Curwen sees and recognizes this fact. "From the art point of view," he says, "no doubt the congregation are a nuisance, and would much oblige by keeping their mouths shut. But the problem in public worship is, how to awaken most earnestly the devotional spirit of the people; and we have a great belief that

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audible participation contributes most powerfully to this end." [1]

At a conference of the bishops and clergy of Oregon, Montana, and Washington Territory, quite recently, the subject of church music was earnestly considered. Premising that the worship of the church was worthy of the very best talent and skill that we have to offer, they held that when this degenerated into the nature of a performance, to please the musical ear, it was evil altogether,—that ornate and elaborate compositions, which prolonged and repeated over and over again the words of canticle or song, no matter by what masters composed, or by what sweet and skilled voices sung, were out of place in the ordinary services of God's house, a hindrance to the true spirit of devotion, and a fatal drawback to the progress of the church.

This is a severe indictment, and one pronounced by gentlemen of culture, as well as notables of the church; and it clearly opposes both the sectarian idea and the artistic idea.

The aim should be to encourage hearty, and the best possible singing by the mass of the people assembled. People ought to go to church to worship God, and not to be delighted by music, and it is the few whose devotional feeling depends in any degree

[1] Studies in Worship Music, p. 200.

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upon the absolutely correct rendering of a musical composition, while the many enjoy and need the privilege of adding their own, perhaps uninstructed voices, to the general songs of praise. Except in so far as music aids to this, its presence at church is simply an impertinence.

Such being the case, the office of the choristers is to lead and to assist the people. In that capacity careful training is important, in order that the singing may not drag or the music deteriorate. In order to encourage the people to sing, two things are desirable: *first*, a good body of sound; and *second*, proximity of the choristers and the congregation. The first is most readily obtainable by means of a large choir, preferably one of men and boys; and happily the day of quartette choirs is fast passing away, and surpliced choirs have ceased to be a party characteristic.

As the choristers are ministers assistant to the officiating clergy, they should be placed near, or in, the chancel; and the second desideratum can be attained by seating the choir in stalls abutting upon the pews, or (where the chancel is narrow or the spaces cramped) in the front pews of the nave. Parishes which cannot afford or obtain well-trained choirs must be content to use simple music and popular tunes.

In a small church, an organ-room may be built out

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on the side of the chancel, and in a church with aisles, the aisles or one aisle may be carried alongside the chancel, and may be used for choir and organ space; but there should be the least possible obstruction between this room or aisle and the rest of the church. The piers or buttresses required to support a stone or brick chancel arch should never be interposed between choir and people. An organ shut up in such a "chamber" as is popular with church architects, loses much both in power and in quality by being smothered by the partitions. If there is not room enough in the chancel for a choir, the organ may be placed in one aisle outside the chancel, as in the Church of the Messiah, Boston, or if there are no aisles, a shallow transept may be constructed just outside the sanctuary, large enough for the organ and perhaps a passage behind, as in St. James, Lancaster, Penn.; but in such a transept let the space above the pipes be as high as possible. The arch of the transept if any, cannot be too high, and the roof should not be higher than the opening into the church. The transept should be formed for reflecting sound, and should be lined with wood inside.[1] In both of the churches just referred to the choir is outside the chancel (which in neither case is a deep one), and is in immediate contact with the people in the pews.

[1] See Studies in Worship Music, by J. S. Curwen, p. 107.

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The true place for a choir of vested choristers is in the chancel, a part on the north, and a part on the south side, benches and *low* book-boards being provided for them. In a chancel twenty-five feet wide, there will be ample space. At St. Mark's, Philadelphia, where the chancel is only twenty-one feet, the choir is very much cramped. It may be assumed that no parish with any decent sense of propriety would think of arranging seats for singers to face the congregation under any circumstances. The choristers should of course be church people, and wherever they are should be provided with ample space to kneel; and it need not be taken for granted that their behavior will be such as to require a screen between them and the people.

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INTERIOR DECORATION.

CONNECTED with interior decoration, are such matters as the color of carpets, the wood-work, and the window-glass, as well as the actual coloring of walls and hangings. There is but little, perhaps no authority, precedent, or general rule to guide the taste in these matters. It may even be laid down that the usual canons, which govern the adornment of dwellings, fail in force in the case of Gothic churches. The frequent inspection or observation of various completed buildings, will probably lead to the selection of some colorist whose advice will guide, although it may not govern, your decision. Harmonic blendings of color, and figures bordering on the minute should be avoided, as such will often lose all power in a large building, and preference should be given to effect produced by contrasts in color, and boldness in details.

I do not propose to discuss mural pictures, for the use of them belongs to quite a different plane, but

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the decoration to which I refer is simply that known technically as "flat," — that is, without perspective or shadow; much of which is usually applied by means of stencils, cut for the purpose immediately in hand.

The general *motif* of decoration may be to accent or to add to the architectural forms of the buildings, by painting borders which follow more or less completely the lines of windows, arches, and cornices, or which make string courses of color about the walls. The base color should be "dead," — that is, dull, — as distinguished from brilliant or glossy; upon such a base small bodies of bright coloring will produce great effect. If gold or vermilion is scattered over a wall surface, it loses much of the power produced by more limited use, in borders, or concentrated in a few places upon a dull background.

The borders or string-courses in the nave may be composed of figures, in different and darker shades of the wall color, and the most brilliant effects and greatest expense should be reserved for the chancel.

"It is one of the most vulgar of errors to imagine that a great deal of ornament will make a building beautiful; . . . the more ornament is used the more difficult it is to manage, and consequently the greater chance of failure there is in inexperienced hands."[1]

[1] Modern Parish Churches, p. 271.

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The carpet, if the body of the church is carpeted, should have the effect of "dead" coloring. If red, the general effect should be a dull hue, like Egyptian or Pompeian red. If green, it should border on olive green. In a church of considerable size, say to seat five hundred or more persons, the use of light carpets, or light-colored wood, natural or painted, for the pewing, should be avoided. Even if it be necessary to stain chestnut, pine, or oak, it is better to do so, in order to obtain a solid base of color, and one which will not mar the effect of decoration upon the walls.

It has already been said that red brick can be introduced effectively for interior adornment; and tiles, marble, etc., can be used to advantage, but glazed surfaces must be introduced very sparingly.

One great advantage of decorating with water-color upon plastering is that mistakes can easily be corrected, and experiments may be tried at small expense. You can wash off water-coloring, but marble or tiles cannot easily be removed and replaced.

Of stained-glass windows there are several distinct and typical varieties: 1. Mere combinations of colored glass in geometric forms. 2. Conventional or symbolic figures. 3. Individuals, groups, or scenes, made in part by drawing on the colored glass. 4. Translucent pictures showing atmospheric

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and perspective effects, as in ordinary works of the painter's art.

These may all be represented in different windows of one church, and the first three may even be combined in one window. It is surprising how small is the effect of stained glass upon the other decorations of a church. It is hardly at all necessary to consider one in relation to the other. In filling a mullioned window with stained glass, the mullions may be almost entirely disregarded. That is to say, the whole window may be used to represent one scene, as if there were no mullions. To the eye it will seem as if one were looking at a picture beyond the window.

The saddle-bars should be placed inside the windows, not outside, as is sometimes done. Placed inside, the obstruction is only their actual size, not increased by their own shadow, and they are in the best position for their use, viz., strengthening the window.

The dripping caused by condensation in cold weather can be prevented by making double windows, or it can be carried off by little drains in the window sills. If wire cloth is used to protect windows it should not cover the mullions, but be fitted to correspond with the sashes.

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THE ALTAR

LEONARDO DA VINCI, in the fifteenth century, painted upon the walls of a convent in Milan, in a hall used as an eating-room by the monks, a picture of wonderful merit, which represents the last supper of our Lord and the Twelve, and particularly that moment when, the Saviour having announced that one of them should betray him, each is asking, "Lord, is it I?"

The artist probably thought this scene an appropriate one for the wall of the refectory. The figures, or most of them, are represented as *seated* at a table, which, however, appears to have no legs.

Perhaps no picture was ever so extensively reproduced throughout Christendom as this of the Last Supper; and it is a common error to assume that it was intended to represent the institution of the Holy Communion, which solemnity would seem to have had place directly after this supper. This error is confirmed in some minds by the fact that the Eucha-

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rist is frequently called the Lord's Supper, but without Scriptural authority; and the name appears to have been added ignorantly to the title to the Communion Office in the Prayer-Book from the same name given in First Corinthians to the *Agapaé* of the early church, which *was* a commemoration of the Last Supper, and which in the early times was wont to precede the celebration of the Holy Communion. Fortunately, in the office itself the sacrament is never designated by this too secular phrase; but popularly it *is* called the Lord's Supper, and supper to our minds implies a table, and a "table" implies legs.

Between the words there is, however, no necessary connection. Any flat raised surface is called a table, — even table-land, which certainly has no legs; and it is entirely proper to call the upper surface of an altar, and by ellipsis even the altar itself, a table; and when from it actual bread and wine are delivered to us with the injunction, "Take, eat;" "Drink this," — the figure acquires additional force.[1]

The prophet Malachi, speaking in the name of the Lord, rebuked the irreverence of the priests of his

[1] The modern sectarians have been led to peculiar results by this confusion of the Last Supper with the Holy Communion.

In accordance with their idea of a commemorative supper, they not only use a table in place of an altar, but receive the communion sitting, instead of kneeling. As the custom of our Lord's time was to eat reclining, they should, in order to be primitive, receive the communion in the same position.

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time, in offering polluted bread as a sacrifice upon God's altar, declaring that by so doing they had said, "The table of the Lord is contemptible;" and thus we see that before the coming of Christ, by a similar combination of trope and ellipsis, God's altar was spoken of as "the table."

So too the Prayer-Book calls our altar "the Table" but also calls it "the Lord's Table," "the Holy Table," "the Altar;" and by the Prayer-Book, as well as by immemorial usage in the Church, its holiness is made something more than mere name.

Except in collegiate churches, and chapels where the use is supposed to be limited to the clergy, it is the universal custom in England and America to protect the altar from irreverent approach, and to separate it from the body of the church by screens, or by rails, which the Prayer-Book describes as "the rails of the Altar;" and in those sacrilegious days, when the churches seemed to be given over to pillage, and desecration, the fiercest Puritan denunciations were levelled against those screens and rails, because they implied a peculiar holiness in that which they guarded.

The Prayer-Book distinctly enforces upon our attention this holiness of the Lord's Table. When the priest commences the preface to the holy trisagion, he is directed to "turn to the Lord's Table." When,

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in the name of all those who shall receive the Communion, he offers to God the prayer of humility, he is commanded to do so "kneeling *down*, [? prostrate] at the Lord's Table," — a degree of outward reverence greater than is generally prescribed, and one which can hardly be claimed as due to the elements of the sacrament, for this prayer precedes the consecration.

Indeed it would seem to be intended that no one below the rank of priest should during the service come so near as to touch the altar; for it is provided that although the deacons, wardens, or other fit persons, may receive the alms and devotions of the people, no one of them may humbly present and place them upon the altar, but the *priest* shall do it; and he, not in any receptacle of common use, but in a fit basin, to be provided by the parish for the purpose. So too, later on, it is made the duty of the *priest* (no layman or inferior ecclesiastic will suffice) to place upon the table the bread and wine, and to say the prayer for the Church militant, whereof the first petition is that God will mercifully accept our alms and oblations. An oblation is a sacrifice, and this our sacrifice is offered by the priest upon the table of the altar.

We have an altar, even as St. Paul declared that the Christians had in his time; and for three hun-

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dred years after Christ, history gives but one instance[1] in which the Christians' altar was called a table; and when that word was used by St. Athanasius, so late as the fourth century, he took the precaution to explain that he meant by it what was commonly called the altar.

This argument is not presented to enforce any sacramentarian *doctrine*, or any doctrine at all, but in support of architectural and ecclesiological propriety. If a table with legs was required by our standards, no one would object to its presence even in the most prominent place in our churches; but we have endeavored to show that it is not required, and to prove that the terms "Altar" and "Holy Table" are synonymous in our formularies; that whatever may be the title, the thing is holy, and being holy, that it is most fit it should be made ecclesiastical in form, and substantial in material; not a mere piece of furniture, to be used for the celebration of a holy mystery to-day, and to-morrow to be sold for some household use; not a moveable to be whisked about at every sweeping; but altar-like to convey to the eyes even of godless lookers-on some conception of its holiness, by its form, by its material, and by its immovable character.

[1] Dionysius of Alexandria, Epistle to Christians of Rome, *Circ.* A. D. 250.

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The altar, then, whether it be of stone or wood, should be constructed in altar form. It need not be expensive; if to be covered with cloth and vested, it may be a plain rectangular box nailed together at the corners, but it should be a well-made box. Whatever is its material, there should be no bevelled or rounded edge to the upper surface (the table), for it is better that whatever vestment is used, even the "fair linen cloth" required by the rubric, should hang from a sharp corner. The length may depend upon the width of the chancel, — never less than six feet, nor less than one third the width of the chancel; the height, three feet three to six inches above the foot-pace; for the depth or width, twenty-four inches is ample. This width is exclusive of the retable when there is one, and when there is none the altar had best be made enough wider to allow of a retable which would be eight to twelve inches wide and probably eight inches high. The retable is intended for the purpose of elevating slightly the vases, altar-cross, and candlesticks, — this elevation being desirable as a matter of "looks," but valuable as leaving the table of the altar free of obstruction.

The level upon which the altar stands will differ according to the length of the church. In one calculated to seat four or five hundred persons, the foot-pace should be at least three feet above the

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floor of the church. This elevation should be broken into steps at different points in the chancel,—say three under the chancel arch, one at the chancel rail, and one, two, or three, at the altar; these last may be returned so as to create a sort of base for the altar.

The foot-pace itself should be at least three feet in depth clear of the altar front.

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THE PEWS.

IT is a mistake to consider pews an undesirable part of church furniture. Fixed seats are much more readily controlled, in relation to architectural effects, than chairs or movable benches; and to control, to subdue them is a great object. For this reason I object to the use of poppy-heads, or any other figures projecting upward on the pew-ends, and would advise that every visible outline of the pews be made rectangular, and the top rails of pew ends and backs as nearly as possible in the same horizontal plane. With this precaution, they will do no injury to a good interior.

The pews need not occupy all the space available for sittings, but only enough for ordinary uses, and spaces may be left, to be filled, in case of need, by movable chairs or benches.

In a large church the pews should not abut upon a wall, but the space next the wall should be used for passage-ways from which to enter the pews. The ends of pews will bear a reasonable amount of orna-

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mentation by carving or panel-work; but let it always be borne in mind that the seats should be unobtrusive in form and color.

The length of pews should be calculated so as to seat each a certain number of persons, allowing eighteen to twenty inches to each adult; twenty inches is more comfortable, but eighteen can be endured on an emergency. Very good dimensions otherwise are these: extreme height of top rail from the floor, thirty-two inches; height of seat, fourteen inches at the front, sloping down and back to twelve and a half inches; width (or depth) of seat, fourteen inches; distance from back to back of pews, thirty-six inches; inclination of the back, from the seat upward, four inches in twenty inches.

The space under the seats should be as clear as possible, to facilitate cleaning, to avoid dust-holes, and in order that the carpeting may readily be removed and relaid. A place for leaving books may be provided under each seat for the use of the pew behind. Sloping book-boards on the front of pews are now entirely disused. They occupied valuable space and nobody ever knew any good of them.

By using a longitudinal brace under and extending the whole length of the seat, no other support will be needed except at the ends, and that annoying construction which boards up the front under each seat

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so as to interfere with the feet when kneeling, will be rendered unnecessary.

Pew-doors belong to the hideous past. Nobody wants them now-a-days.

The kneeling benches should not exceed three inches in height, and their upper surfaces should not be inclined. The best construction is simply a one-inch board five inches wide and not over thirty-two inches long, supported at each end by a block nearly flush with the end of the board. There should be enough of them in each pew to occupy within four or five inches of the entire length of the space under the seat in front.[1]

Wardens' pews, a little raised above the others and at the west end of the church, will enable those officers to overlook the building, and to see whatever requires their attention. In old churches their official character used to be marked by white wands standing at their corners, — a custom still retained in some places.

OF THE CARPETING.

THE color of carpets or floor-cloths is treated under the head of decoration; it should be neither light nor brilliant, but quiet and subdued.

[1] If hassocks are preferred, there should be one for each person, and the bottom should be covered with some material having a glazed surface.

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If the flooring under the pews is to be carpeted, it may be desirable to consider the carpeting in fixing the length of the pews. So that the width of two, three, or four breadths of carpeting shall a little less than cover the length of the pews. Then if the floor-space beneath the pew-seats has been left clear, whole breadths of carpeting can be drawn through from east to west of the church, and pinned or buttoned down by one of the systems now commonly advised by house-furnishers, or they may be tacked down just enough to prevent people being tripped as they enter the pews.

With this arrangement it will be comparatively easy to remove the pins, or tacks, and to draw out, cleanse, and relay the breadths. Another advantage is that the breadths can be exchanged one for another or moved a foot or so lengthwise, so that a portion which has met the least wear may be put in place of that which has borne the hardest use.

Pews the seats of which are two inches more than six feet or nine feet long, in the clear, will accommodate on a pinch four or six persons of average size, and will require two or three breadths of yard-wide carpeting; the uncovered space, if any, may be left at the upper end. The figure of the carpet should not be large or distinct, and should never bear the sign of the cross in any form; it is of no consequence that

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the breadths which extend under the seats are not matched.

If there are carpets in the passage-ways it is not necessary that they should occupy the whole width of the passages; they may be tacked or pinned down, and should never be cut to fit the pew-ends, but should run quite clear of them. The space in the passage-ways not covered by the carpet may be as much as a foot on each side. If the floor is of wood, it may, where uncarpeted, be stained or painted a dull hue. In calculating the width of the passage-ways, it will be well to make sure that they are wide enough in the clear to allow of the width of carpet proposed; spaces one or two inches too narrow may make a good deal of difference in the trouble of carpeting. If this matter is forgotten in calculating the width of the passages or length of the pews, ingrain carpets may be ordered from the manufacturers to be woven one or two inches narrower than the standard width.

CHANCEL FURNITURE AND FITTINGS.

STALLS with prayer-desks in front of them have entirely supplanted the cumbersome reading-pews in the chancel, and benches placed stall-wise are frequently used for the accommodation of the choris-

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ters, — the best possible arrangement if the choir is vested, a most objectionable one otherwise. Such seats should be of wood, comely but simple in form, and only slightly ornamented, that they may not interfere with the proper supremacy of the altar. In my own parish considerable cost was incurred to construct stalls and stall-fronts of wood, after patterns which were originally designed for stone work, and the effect is bad.

There need be no chairs in the chancel, save one for the bishop, when he is present.

If there is to be a chancel rail let it be as unobtrusive as possible. A simple moulded bar of wood, supported by wrought-iron standards, will suffice: its height should not be over twenty-seven inches. A place for the communicants to kneel should be provided by extending the floor of the sacrarium ten to twelve inches beyond the rail, and making a step there. This step should be not over six inches in height. There should be no gate in the rail; the object of the rail is especially to support infirm persons while kneeling or in rising, and such persons will find space at one side of the opening.

There should be a credence shelf or table in the chancel, the ignorance of the Bishop of Virginia on this subject to the contrary notwithstanding. It should be against the wall of the chancel and south

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of the altar, its upper surface lower than that of the altar; and its edge should be sharp and rectangular, not bevelled, rounded, or moulded. The credence should not be made prominent by color or material, and may be movable.

A lectern of good design will be required for the lessons in any church, and in small churches or chapels it will answer well in place of a pulpit. Its position should be one from which a congregation can readily hear the reader.

The litany-desk or fald-stool is a sort of *prie-Dieu* at which the litany may be said, the minister facing the same way with the people. Its proper place is upon the floor of the nave, directly opposite the altar and near the chancel steps. It should be movable in order that it may not interfere with the use of the space in other offices.

THE PULPIT.

THE pulpit should be so constructed and placed as best to accommodate the preacher in relation to his hearers. It should be sufficiently elevated to enable the voice to command the whole area of the church, and it should not be raised any higher than is needful for this purpose. In a church capable of seating six hundred people pretty compactly, the

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preacher should stand about thirty to thirty-six inches above the floor of the church. Thirty-two inches is a good average height for the sides or rails of the pulpit above its floor. A small book-rest arranged so that it may be raised or lowered twelve inches, will accommodate preachers of different height.

If it is convenient to place the pulpit so that the east wall of the nave, or some wall-surface, will be directly behind the preacher, it will usually assist his voice. In large churches, something in the nature of a sounding-board is frequently required behind or above the pulpit. To provide this becomingly is a difficult problem for an architect, and his talents will be better employed in building a church in such form that no sounding-board will be required. Sometimes a change in the position of the pulpit will overcome the difficulty.

LIGHTS.

It is very desirable that the lights in a church should be so arranged as not to dazzle the eyes of the people; and this may be effected sometimes by placing the lights high, and sometimes by making use of columns, timbers, or other architectural projections as screens toward the west. The way once common, of lighting by standards from the floor, is

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probably the worst that could be devised, because the glare will inevitably trouble the eyes of some of the people as they look toward the chancel.

It will be found impossible to arrange gas-burners in any way to improve or to exhibit favorably the architectural features of the church. It is best to look mainly to placing them so that the people shall get light from the rear, or the side, and so that it shall not strain their eyes.

When gas is used for lighting, the pipes should be placed so as to be accessible in case of need, without tearing away floors or plastering.

Possibly, electric lighting may prove to be the very best for churches, for the lights can be placed high, the light from incandescent lamps is agreeable, and there is no danger from smoke or of fire.

The arrangements for light by day will require some consideration. Where the church has ample space, the light can easily be obtained from every direction, but in cities there is sometimes more difficulty. In all cases a church with aisles can be abundantly lighted from a great west window, and a lofty clerestory.

Let "dim religious light" be limited to poets and poetry.

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HEATING APPARATUS.

THE ancient churches and cathedrals had no apparatus for warming the air, and no chimneys; and among other customs of old England which our ancestors brought hither, was that of ignoring the comfort of the congregation. But as our winters are much more severe than those of England, the trial to the constitution was greater here. Various devices, such as foot-stoves supplied with coals, or stones heated at some neighboring hospitable hearth, together with warm clothing, were used to alleviate suffering; but after all it must have been severe. Finally chimneys were built, and huge stoves of cast iron were used to take the chill off the air, which had been taking chill on for the previous six days.[1]

There being no precedents for the construction of chimneys in Gothic churches, that appendage, necessary in our northern climate, was apparently habitually

[1] October 5, 1812, Medford, Mass., voted not to have a stove in the meeting-house. In Hingham (Old Ship) meeting-house, built 1681, stoves were first used in 1822.

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forgotten or ignored in our earlier churches; and to this day, in a majority of instances, the chimney is evidently regarded as a thing to be ashamed of, for it is usually tucked away as much out of sight as possible. In revenge, no doubt, the chimney refuses to draw, and there must be added to it an upper storey or extension, — often of iron pipe, which, topped off with the latest ventilator, and stayed with iron rods, makes a most hideous appearance.

Now, a chimney somewhere is a necessity, and it is just as well to acknowledge the fact; and unless it is to be entirely detached from the church, it should be wrought boldly into the architecture, and carried to a point higher than any ridge of the building. Smoke-flues are often built concealed in gable walls, and sometimes carried up within the tower; but an honest chimney need not be a deformity, and in the hands of a skilful architect may even be made a reputable feature of the building.

Hot-air furnaces, which are really huge stoves sunk below the church floor, and supplied with fresh air from without, are the heaters most common in use, and the most economical in construction. They are often so heedlessly built, and so carelessly managed, as to cause destruction or damage by fire, but it is easy to avoid all danger of such calamity. The excavation made for the furnace should be deep

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enough to allow a space of at least two feet between the top of the heater and the lowest timbering above. The smoke may be carried to the chimney in a vitrified clay pipe, or in a brick flue sunk in the ground, or the furnace may be placed in immediate contact with the chimney so that no pipe will be required. The hot-air chamber should be of brick, and the best construction is to have it arched or domed over; if there are timbers above and near it, all danger of fire can be avoided by furring with woven wire at an inch distance from, and following the shape of timber and flooring, and laying on a thick coat of plaster. The cold-air box or conductor should be of some non-combustible material, and should be ample in size, much larger than it is commonly made. It, too, may be of brick, and sunk in the ground. It is better to take the cold air in from the north or west side or end of the building, and to admit the warm air chiefly from the same sides.

The furnaces should be set well up to the actual north side of the building. If there is to be only one, it should be on the north side, and near the west end, so that the coldest winds, which are northerly and westerly, will tend to carry the heat over the church. If the furnace register is placed in the floor, the heat will be thrown directly upward, where it is not wanted; and this can be avoided in part by setting

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the register upright in a wall,[1] or by covering it with a metal hood, so that the heat shall be thrown out upon the floor; but the heat from air furnaces cannot be distributed so advantageously as is possible with other systems.

Trinity Church, Boston, is heated by hot-air furnaces, and the cellar, which extends under the whole church, serves as a huge air-chamber, from which the heated air rises into the church through a great many small registers, of which there is one at the entrance to each pew. The cold air is received from outside the walls, and distributed to various parts of the cellar by means of conductors made of cotton cloth. The apparatus is curious, but hardly worthy of imitation.

Heating by means of pipes, through which steam or hot water is made to circulate, is more expensive in construction, but in large churches is usually more satisfactory, as the heat can be more evenly distributed, — indeed, can be carried to any point desired, — and the same fires can be used for several different buildings. If the heating is to be accomplished by direct radiation from the pipes, etc., without using air from outside, there should be more pipes on the

[1] Mr. Charles Edward Parker, of Boston, the architect in charge of government buildings for that district, has determined, by a series of experiments, the fact that upright registers discharge more freely than those placed in the floors.

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north side of the building than elsewhere; and it may be well to place coils of pipe under the windows, and near the doors, on that and the west side, which may be done without any disfigurement, if contemplated by the architect in his plans originally. Lines of pipes may also be carried along the passage floors or in the walls, in channels sunk in the flooring or walls, and covered by gratings. Such channels, if in the central passage-way, should lie close along the entrances to the pews outside of the carpeting, if any is used there. These will require constant attention and frequent cleansing to prevent the accumulation of filth and consequent odors from the hot and dirty pipes.

In these modes of heating, the water or steam boiler may be set quite outside the building, as at St. Patrick's Cathedral, New York, and indeed may be placed at a considerable distance, and the heat can be carried under-ground with little waste. It is claimed that steam-heating is as satisfactory, if distributed by pipes carried high up on the walls or elsewhere, say eight or ten feet above the floor, as when placed near the floors. Westminster Abbey is heated, certainly in part, by pipes laid in the triforium, where they must be at least thirty feet above the floor.

Altogether the most effectual way of distributing heat is by hot-water pipes passing through each pew. These may be laid in channels constructed for the

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purpose in the floors, or they may be so placed as to serve for foot-rests, as is very commonly done now-a-days in railway cars.

If steam or hot water is used for heating, the arrangement must be such that the pipes may all be drained when not in use; otherwise they may suffer damage by freezing.

It seems habitually to be forgotten that people go to church in cold weather dressed for protection against outer cold, and that the main thing required for the comfort of a congregation is a provision for keeping the feet warm, as was once done by hot stones and foot-stoves. To do this will need only a very moderate degree of heat, if that heat is supplied by means of water-pipes in every pew; and there will be no danger of raising the temperature of the church excessively. When one remembers that it is customary to keep a congregation, wrapped in winter furs and over garments, shut up for an hour and a half in a room heated to a temperature proper for the apartments in a dwelling-house, it ceases to be a wonder that going to church is so fruitful a source of colds and attendant ills.

It cannot be too distinctly urged, that it should be made the duty of some official of the parish to watch the thermometers, and to govern the heating by the outside temperature.

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OF VENTILATION.

THE problem of ventilation, which is a very difficult and very troublesome one as connected with residences, is comparatively simple in the case of churches. Heating and ventilation must be considered in connection one with the other, partly because the latter is sometimes required to regulate the warmth of the atmosphere, and partly because heat may be used to promote ventilation. Nevertheless, it is a great error to connect the two too closely. It will not do to take it for granted that the air in a church, because it is cold, is therefore entirely or properly pure.

To promote ventilation, and to heat a church comfortably, it is necessary that there should be a constant movement and change of air. This is accomplished without inconvenience in very warm weather by opening all the windows, and thus allowing the breeze to blow through the church. The great number of openings and the diversity of the currents of air,

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coupled with the fact that the air is warm, prevents dangerous draughts. When the weather is very cold, and the heaters are in use, if the heating-apparatus is properly placed and arranged, the principal necessity is to make the entrances for fresh air through the heaters ample in size, and to provide for the exit of air by apertures in the gables, or by opening windows on the leeward side of the church.

Perhaps the most difficult time to provide a sufficient change of air, without creating objectionable draughts, is when the outer air is too cool to permit it to blow freely through the building, and yet too warm to make fires supportable. In such cases, leave windows, doors, etc., open on the leeward side of the building, and keep those to windward closed. So simple is this idea of ventilation that I call especial attention to it, for a liberal area of openings in the windows should be provided for this purpose.

It should be borne in mind that the free outer air is always in motion. If a building could possibly be made so perfect that by closing the doors and windows the interior would be air-tight, it would of course be necessary to provide ventilation to prevent the suffocation of a congregation. Happily, such perfection of construction is never attained. About every door and window, at every joint in the wood-

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work, and even through the floors, the roofing, and the walls, the air is always forcing its way in and out; and although the movement of the atmosphere is vastly impeded by the walls, etc., yet even inside there is some movement in the direction of the outside wind. Now, by making openings on the leeward side of the building, a portion of the obstruction is removed, and more air will enter at the windward side, and the movement of air will increase in proportion to the increased area of these leeward openings, and yet without any perceptible draught.

What is required for the comfort of an assembled congregation is not an elaborate apparatus especially for the purposes of ventilation, but the intelligent adaptation of simple means, such as are ordinarily provided, to the varying circumstances of the temperature, the direction and force of the wind, and the number of people in attendance.

High up in each gable, or in small dormers made for the purpose in the roof, there should be provided openings which can be manipulated from the floor, and the greater part of, if not all, the windows should be provided with swivelled panels. The heaters, if hot-air furnaces are used, should be provided with large openings for the admission of the outer air; they are almost never large enough. The cold-air openings should be as large at least as those for

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heated air; the registers should be arranged for opening and closing wholly or in part as may be required, and thus it will be made possible to admit a proper amount of air which is not over-heated, and which is in wholesome condition for breathing.

Thermometers should be fixed at various points, to inform the wardens as to what is the degree of heat at different parts of the church; and a little careful attention will enable the authorities to provide for the comfort of the people without endangering them from draughts. It is a draught of *cold* air that is to be feared; and if care is taken to heat the air as it enters, the movement of the atmosphere may be rapid without doing injury.

One very important aid to ventilation will be found to consist in the thorough change of the air in the church before every service. The average sexton knows nothing about wholesome air, but has a very high appreciation for warm air. He will therefore build a fire early enough, and may be trusted almost always to keep it hot enough, but there his sense of duty stops. Before every service, except possibly in extremely cold weather, all the windows should be opened, and the wind should be allowed to blow through the building for fifteen minutes, effecting a thorough change of air. The windows should then be closed, and the church allowed to become warm.

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By this means a reservoir of fresh air is secured, which, in churches of considerable size, and when the congregation is not large, will of itself go far to prevent discomfort during the time of service.

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ROOFS AND GUTTERS.

A HIGH pitched roof, besides appearing better to the sight, has practical advantages: it provides air-space for a congregation at moderate cost, and it sheds snow and water readily. In a church of considerable height the timbers of an open roof should be larger than is necessary, or they will appear to be too small; they will look better if not too carefully planed, for the inequalities of the surface which attend good hewing will be more satisfactory than the smoothest finish. They should never be varnished.

The timbers should be straight, and should appear so; and the common way of casing them in smooth boards shaped to form curves is not only a useless expense but actually a defect. If it is necessary to splice timbers, it is better that the splicing should show; but bolt-heads, stirrups, etc., should be painted to prevent rust.

There is a good deal of trouble, in our colder climates, caused by the melting of snow on the roof

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under the influence of internal heat. This influence ceases at or beyond the outer walls, and there the melting water congeals, forming a dam, which backs the water up under the slates or shingles, causing leaks in the roof and damage to the ceiling and walls. Steep-pitched roofs are not liable to this difficulty, for the snow, if melted from within, slides from them to the ground or to a lower roof. It is often necessary, in a low pitched roof, to cover two feet at the eaves with metal to prevent leaks, or else to clear the roof of snow after every fall.

When outer walls are not over 18 feet in height, I would advise that gutters and spouts be dispensed with, — arranging the doorways and perhaps the windows so as to shed the drip, and paving the ground under the eaves with stone or concrete in such manner as to carry the water away from the building. When gutters are used, it is better to detach them from the roof, and support them by brackets built in or fastened to the walls. They are much less liable to obstacles when so placed, but will need to be larger.

Roofs, valleys, gutters, and spouts should be carefully inspected at least once a year. After the leaves have fallen is the best time, in the country.

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OF ALTERATIONS OF CHURCHES.

IT has already been suggested that, in selecting the site and making the plans for a new church-building, the possibility of future enlargement should be considered; and if such enlargement seemed probable, that the direction and character of the extension should be provided for, so that when the time came, the church might be widened or lengthened at moderate cost and in harmony with the original design. Such provision may extend only to avoiding the construction of a west-end tower, because the great expense of taking down and rebuilding a tower would be a serious bar to the extension of a nave; or it may be merely a question of leaving space for future additions.

There are cases where a parish is in possession of a substantial building, of uncouth appearance or insufficient size, which it is desirable to convert into a more seemly building, or to enlarge in seating capacity. Or a parish may have decided to buy some edifice

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not intended for our order of worship, and the problem arises as to how it may be adapted to the Church's way. Of course the circumstances of different cases will be too diverse to admit of any general rules, but some instances may be cited in which such problems have been solved, and a reference to one or two of these may be suggestive and helpful in other parishes.

I should not hesitate in any case to advise the removal of galleries. I do not believe that any church was ever built with galleries that would not have been better in every respect without them. It is utterly impossible to make an arrangement of side galleries which will effect any considerable addition to the sittings, and yet be convenient or consistent with reverent use by worshippers. The old-time high pulpits were constructed in order that the preacher might be lifted up high enough to be seen and heard by the people in the galleries; but the chancels were not elevated, and were often out of sight of those who occupied the galleries. Their almost universal mode of construction implies seats in rows rising from front to rear, — a very awkward arrangement; and in the galleries of many churches no attempt to provide suitable accommodation for kneeling would seem to have been considered worth the builders' while.

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If a parish church is habitually over-crowded, it is not in a particularly bad way, — there are many evils worse than that; indeed, it may rather be asserted that such a state of affairs is desirable: it certainly has advantages. It encourages early attendance on service, and it solidifies the congregation into one sympathetic mass, instead of leaving them in isolated groups.

But the fact that the congregation is too large for the capacity of the church does not necessarily imply that the church must be enlarged. There remains the possibility of increasing the number of services, and dividing the people into several congregations, by repeating the service at different hours, — as is done in some of our free city churches, and as is the common mode adopted by the Roman Catholics to meet the same difficulty. This may require an increase in the number of clergymen and in the current expenses; but it costs so much money to enlarge a church that the interest on the cost of enlargement will usually suffice to meet the added expenses of a parish which elects to increase the number of its services and preserve the building intact.

Another inducement to the alteration of churches — one which may or may not be combined with pressure for increased accommodation — is the laudable desire to convert an unchurchly edifice into one

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more suitable and more attractive. There are many places where, in pioneer days, a church was built more according to zeal than to knowledge of architecture. These were apt to be very simple, rude, and characterless in style, but also sufficiently substantial in construction to endure for scores of years at least. Some such buildings become valuable because of historical associations; perhaps under them reposes the dust of the founders of the parish. There is a natural reluctance to the destruction of such a building, but also a praiseworthy desire to make it more suitable and more church-like. If the change can be made piecemeal,— a little now with the money at command, and a little more year by year as the means permit, until all is done, — the total cost may be considerable, and yet it may not be felt as a burden at any time; and as each instalment is completed, it brings its own satisfaction and new encouragement to proceed in making those changes which are yet required.

St. James Church, Lancaster, Penn., was originally a square brick box, except that on the west end the wall was considerably higher than on the other sides. The walls were provided with windows in rows as if for two storeys, and the only departure from rectangular simplicity was in the round window-heads of the upper course of windows and the construction

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ST. JAMES, LANCASTER, A.D. 1876.

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of pilasters connected with round arches,—the brick-work projecting a few inches so that the windows were in shallow recesses in the wall.

It is now a church of creditable appearance, having a shallow chancel with circular apse, a north transept for the organ, a transept-aisle for the vestry room, and at the west end a façade of agreeable proportions, flanked on the north by a stately tower. The upper course of windows has been cut down, and is separated from the lower course only by a band of irregular brick-work, so that outwardly and inwardly the impression is given that the two are parts of one long and narrow window. Inside, the old galleries have been removed, and the whole interior effect is good. The old pews remain, and there is not sufficient elevation to the chancel, but improvement in both these respects is contemplated, and has been calculated for in what has been done. The floor of the tower-porch is about two feet below the level of the church floor, and as there is no cellar it will only be necessary, one of these days, to remove the pews, and drop the floor to the level of that in the tower, and the desired elevation will be obtained.

During the greater part of the time while these changes were in progress (they were not made all at the same time, but at considerable intervals), the church was in use as usual.

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A second instance of alteration was that of a wooden church in an old New England town. The building was a simple rectangle, one of the square roof, two storey, meeting-house type common seventy years ago, having north, south, and west galleries. Except for the addition of a chancel, there is not much change in the outward appearance, but the inside exhibits a chancel, nave, and aisles. An interior ceiling has been constructed over the body of the church, rising on each side from what were the fronts of the galleries. The parts under the north and south galleries appear now as aisles. The whole effect is churchly and pleasing. The space between the new ceiling and the outer walls where the galleries were is cleverly utilized for various parish purposes.

The King's Chapel, Boston, built about 1753, was probably the first structure of Quincy granite in that city. I have heard that the use of that stone was objected to on the ground that it was doubtful whether a sufficient quantity could be obtained for the purpose; and that on completion of the church the building committee declared, in their report, that not only had enough granite been obtained in Quincy to build the walls and tower, but they believed that there was enough more to build another just such church!

This stone church was built around and over the

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wooden chapel which preceded it, and which was used for service until the second was roofed in, and then taken down and removed.

The number of churches in England which have been restored, altered, or extended within the past forty years is very great; and all or nearly all the old cathedrals and great churches there have during their existence undergone changes, so that on their walls one can read the story of the rise, progress, and decline of gothic architecture, and can tell by the style of the work the century in which the various changes have been made.

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THE CHURCH'S WAY.

EVERY organized body of Christians has found it necessary to give some attention to the suitable construction and arrangement of its places of worship, to the order of the services, and to the provision of fixtures, furniture, and other accessories required for the proper administration of those services. The Quakers, the Puritans, and the Methodists reduced the amount of such attention to the minimum; while the Roman and Oriental Churches have exhibited the maximum.

In New England, under the rule of the Puritans, indifference in these matters was exalted almost to the dignity of doctrine. There, free from any constraint, those Protestants against Protestantism, and reformers of reformation, wrought out their own ideas of a model Christian society. Revolting against "ecclesiastical tyranny," "gross superstition," and "cold formalism," they determined to found in the blank wilderness of America a Christian Church

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which should forever be free from prelacy in its government, and from forms in its services; one whose worship should be that of the spirit and not of the body.

The chief abhorrence of the Puritans was Popery, and under that, as a generic term, they classed all Episcopal government and all ecclesiastical observances. They were radical in their ideas, and endeavoring to practise what they taught, would not permit the title "church" to be given to their meetings or their meeting-houses, rejected all architectural decoration, and even refused to allow the Cross, the symbol of Christianity, any place upon or within their buildings. Marriage was recognized only as a civil contract; baptism was neglected, and burials took place without prayer or ceremony. Christmas savored of the Mass, and mince-pies savored of Christmas; and therefore Yule-tide greens were never seen, and pumpkin-pies were exalted. All Church days were erased from the calendar, all Church seasons were forgotten.[1] Even the reading of the Bible in meeting was looked upon with suspicion.

The Puritan clergy wore no vestments. The surplice was to them a badge (they called it a rag) of

[1] Whosoever shall be found observing any such day as Christmas or the like, either by forbearing labor, feasting, or any other way, . . . shall pay for every such offence five shillings as a fine to the County. — 1659. MS. Records, Vol. IV., Part I., p. 366, General Court.

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Popery, and among them there was admitted neither supremacy in rank nor variety in orders; music was not encouraged, and chanting was forbidden. In short, the people were left as nearly as possible without any outward objects to assist in their worship, and without any of those time-honored days, seasons, and observances, with which their Mother Church had sought to inspire and cherish in her children holy thoughts, and by the aid of which generations of their ancestors had been holpen in their public devotions.

Here was an attempt to eliminate from religious worship all those features which characterize the Church, and now, after more than two hundred years of unhindered experiment, we can judge of the result.

The representatives to-day of the Puritans are the Congregationalists, or Independents. They claim for their houses of worship the name "church," and are apt to be offended when one speaks of them as meeting-houses; and these resemble churches both in outward form and inward decoration. Gothic and Classic structures in stone are replacing the plain wooden or brick buildings of their predecessors. Over the entrance doors you may find inscriptions in Latin, and upon the lofty towers crosses symbolizing the five wounds of Christ. The interior walls

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are blazing in gold, blue, and vermilion; and among the decorations you may see most of the mediæval symbols of the Catholic faith, and many texts painted in monkish letters.

Their societies and churches, once merely numbered, are now named after the saints of their peculiar faith. The Eliot church, the Payson church, the Church of the Pilgrims, and the Church of the Puritans accommodate luxuriously the successors of them who counted SS. Peter and Paul, the martyrs and all saints unworthy of similar commemoration, and who doubted seriously whether any heating-apparatus in the meeting-house, or the use of instrumental music could be consistent with vital godliness.

In these houses of worship, on the day which they yet call the Sabbath, they celebrate with a certain pomp the worship of the Almighty. In that part of the building which, if it were a church, would be the chancel, there is an elevated desk in altar form, and near it a seat for the minister fit to be a bishop's throne. To begin the service, a clergyman, perhaps robed, gives out from a printed service-book a chant, which is sung by hired choristers in cadences composed for the Romish mass, and which closes with *Gloria Patri;* then follow prayers, lessons, and hymns, in order as exact as if imposed by legal rubrics, and then the congregation settles away among the

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sumptuous upholstery to enjoy or to criticise the sermon.

It has already been said that the Puritans abolished from their calendar all holy days and seasons, but they found that it was necessary to supply the place at least of some of them, and Thanksgiving was invented, with its turkeys, to replace Christmas and its geese, — care being taken that the new festival should not occur in December. In like manner a fast-day was appointed annually in the spring (but always for a Thursday) to replace Good Friday, while "protracted meetings" might be considered as substituted for the Ember or Rogation days. Up to recent times, throughout New England, fish was eaten on Saturdays in contempt of religionists who fasted on Fridays, and the flesh was mortified by unusual abstinence on Sundays as a protest against the ancient festal character of that holy day.

But these makeshifts have all proved useless, for now the greens of Christmas and the flowers of Easter bedeck alike the churches and the meeting-houses. Lent is a favorite season for revivals among the sects, and the religious observance of our festival and fasting seasons is more general than that of the Puritan substitutes. The Puritanism of the seventeenth century exists no more. It has fallen because of its own inherent weakness. It strove against

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man's nature, and human nature has proved too strong for human theory. Thousands upon thousands of our Church people trace back their ancestry through Puritan progenitors, and it would seem that the tide has but commenced to flow, and that tens of thousands more are coming to find comfort in our service, and peace in our communion.

As might have been foreseen, the Puritan, and more recently the Methodist movements, were not without influence upon the Church. Our good mother divested herself of much of her proper adornments, and put on much of the Puritan sackcloth, in hopes thereby to win back the straying ones, — but all in vain. At last, weary of following them, she turned to her faithful ones again, resuming her fit apparel and those bright jewels which the bride of Christ should wear. From her altars the lights, so long extinguished, again proclaim the presence of Him who is the Light of the world, and again she gives her children daily bread from the Table of her Lord, repeating His most comforting words, "Come unto me . . . and I will refresh you;" and as she leads us through the Christian year arrayed in all her robes, they who fled from her abasement come thronging to behold her beauty. Throughout the land churches, chapels, schools, hospitals, orphanages, and homes for various charities — ranging from log-

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buildings in frontier settlements to ornate structures on city streets — are rising at the bidding of the awakened Church, and over all she places the symbol of the Holy Cross, even as she marks it on the brows of christened children, to hallow them.

Quakerism is dead. Puritanism and Methodism, to avoid the same fate, have been obliged to abandon the ground upon which their schism was based, and find it needful, in order to hold the allegiance of their people, to reach out and gather in such aid from architecture, decorative art, and music as is foreign to their origin. Such imitation of the Church may for a time and to some small extent serve to check their people from the Church-ward drift, but the remedy will not suffice. That which the Church may wear with dignity and grace hangs awkwardly on Puritanic forms; that which with us is full of meaning may be senseless on their lips. Prayer-books compiled to suit some local whim, and emasculations of the Church's Liturgy, serve only to convince earnest minds of the superiority of that book which is the condensation of ages of devotional experience. The only proper use of ritual is to strengthen devout souls, and to enable them to worship God more fervently in spirit and in truth, and this result no ritual invented yesterday can accomplish in full measure.

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No one educated in the Church from youth can realize the sensations which are experienced by one brought up in sectarian ways, as the true character of the Church comes to be understood by him. Wandering, perhaps, in other lands, he has felt the power of architecture and of ritual; and in letters home has recorded how his heart was stirred by some glorious creation in stone, lifting heavenward its towers, or cross-crowned spires; or by some cathedral interior, with its dusky aisles, its lofty columns, its wondrous arches, its pictured glass, and sculptured stone; or, yet again, by some solemn procession of robed priests and acolytes, the sound of whose voices chanting holy psalms was echoed from groined vaultings dim with years and loftiness; and he has owned that under this merely outward influence, although he was foreign in the land, and ignorant of the tongue, his soul was softened to holy thought and earnest prayer.

Yet it is only when he comes to know the Church, that all her glory is revealed to him. Then he sees that her architecture, sculpture, painted glass, and walls decorated with color, like her prayers, and psalms, and hymns, are not merely things to be admired as examples of human skill; then all are felt to be but varied forms of worship, — different ways in which the children of the Church seek to

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express their adoration of her Bridegroom, who is Christ the Lord.

In our Church alone one finds in full measure the practice of common prayer. Churchmen of the Roman obedience, Presbyterians, and Calvinistic Independents, leave to the clergy and the singers almost the whole of the words of service, and the laity assist like on-lookers at a performance, or like an audience at a lecture or concert; but with us the devout laity may bear a part in every office, and in some may bear the whole.

In a devout congregation, when the minister calls to prayer, the people bend their knees to God; when called to praise, they stand shoulder to shoulder, and even if their musical education is imperfect, the injunction is obeyed: "Let the people praise Thee, O God, yea, let all the people praise Thee," — including the choir, but not excluding others. The little children are not only suffered to come unto Him, the loving Lord, but they are gathered near to His altar, where their fresh voices lead His people's praise.

In the midst, perhaps, of a community which denies the Divinity of the Lord Jesus, the people, obedient to ancient canons, testify their belief in God the Son by "due and lowly reverence" to the Holy Name at which Holy Scripture has declared "every knee shall bow."

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No wonder that mothers of the "Baptist" faith are attracted to a church which is ready to receive her little ones to baptism, and to graft them into Christ's flock. No wonder that young men and maidens who would lead holy lives are attracted to a church which weds them in the name of God so decorously, and blesses them so solemnly. Who can behold without deep emotion the Church's tender burial of her dead?

It is not by pomp alone that the Church is bringing and binding the people to herself. From the cradle to the grave she waits upon our lives, providing most comfortable words in our affliction or our penitence, and high lauds and joyous anthems for our happier hours. In rough upper chambers, on the treacherous seas, in quiet country chapels as well as in noble cathedral walls, through the voices of lay-readers or the swelling chorus of people, choristers, and clergy she dispenses holy cheer; and we have the promise of God that this shall be perpetual, — that the gates of hell itself shall not prevail against her.

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